CONSTRUCTION

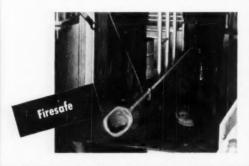
METHODS AND EQUIPMENT

June 1950

A H. CRAW. HILL PUBLICATION

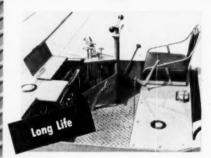


"Wigglesworth certainly has developed confidence since he's been working on this slip-resistant 4-Way Safety Plate."



For greater safety under foot, in your plant and on your products

Inland 4-Way Safety Plate







INLAND STEEL COMPANY, Dept. CM60 38 South Dearborn Street * Chicago 3, Hilinois Sales Offices. Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Ionis and St. Paul

STOCKED BY LEADING STEEL WAREHOUSES



New Bulletin with New Ideas—

Just Out! Bulletin F1. Complete engineering and application data. Send for it!

B.F. Goodrich



BFG users report: Continued savings — thanks to double bruise protection

B. F. GOODRICH Universals were reported by one operator to be in good condition after daily quarry service for over 21 months. Another operator reports over 4500 service hours from Universals against only 1600 hours from another make in identical service. Still another report told of tires that were still "young" at 3200 hours and probably good for thousands more. These actual user reports spotlight the great difference between various makes of off-the-road tires.

When results are measured, BFG tires always stand high. There are many reasons for the continuing top performance of B. F. Goodrich tires. For example, notice the tread on the

Universals in the picture above. It's designed to give traction both ways. More than that, it is made of specially compounded rubber . . . armor against sharp rocks and other tire killers.

Also, BFG tires have double bruise protection in the form of a double nylon sback shield... layers of nylon cord built between the tread and the body plies. Under impact, the strong, elastic nylon shields the cord body. And there are two shields for double protection!

Only B. F. Goodrich gives you the added protection of the nylon shock shield; the added savings from (1) longer tire life (2) increased bruise resistance (3) less danger of tread sep-

aration (4) more recappable tires. Nylon shock shield costs no extra—you pay no premium.

There's a specially designed *BFG off-the-road tire for every need. See your B. F. Goodrich dealer or call The B. F. Goodrich Company, Akron, Ohio.



*Typical example: New ALL-NYLON tire for tough construction projects, quarry work, strip mining, etc. In all tests not a single tire blew out, not one flex break occurred!

OLIVER HG Crawler with Ware backfiller blade attached to shovel arms.

Oliver HG Crawler with Ware Loader loading sand into truck.

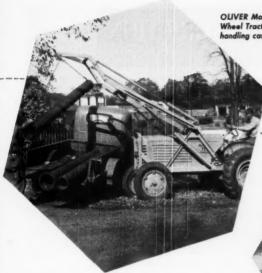


...take the out of Your

Whatever your loading problem, the easy, economical answer is an Oliver Crawler Tractor or Oliver Industrial Wheel Tractor and Ware Front-End Loader.

These powerful tractors and the hydraulically operated loaders are easy to operate... easy on maintenance and operating costs. Lift and bucket are hydraulically controlled. Hydraulic control of bucket assures greater breaking-out action and full loads . . . prevents wasteful spillage. "Midsection" pivot allows longer reach of dumping position and distributes the weight ad-

OLIVER HG Crawler with Ware Loader on ditching job.



OLIVER Model "88"
Wheel Tractor with Ware Boom
handling cast iron pipe.

OLIVER Model "88" Wheel Tractor and Ware Loader loading out gravel.



"Load" Loading Problems!

vantageously over the tractor frame to minimize strain. The hydraulic rams are designed to take most of the shock loads, assuring longer life for both tractor and loader.

And, the tractor-loader unit can be quickly converted to backfiller, boom or lifting fork. Special buckets are available for coal, snow or humus loading. The hydraulic system can be used to power other equipment such as mowers, sweepers, etc., in combination with the loader. For all the facts, see your local Oliver Industrial Distributor, or write direct to:

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio
A complete line of Industrial Wheel and Crawler Tractors



ROE

STEEL TAPES

are best for CONTRACTORS

the facts prove it!

FIRST AND FOREMOST, Roe Steel Tapes are extremely easy to read... and they go right on being clearly legible year after year. The black markings are permanently etched into the steel which is then nickelplated to provide a lustrous contrasting background. A transparent plastic overcoating is added for topmost wear resistance—and durability.

5

-0

œ

_0

9



- A Steel tape B - White nickel
- C Black etched markings
- D Plastic overcoat

Pictured here is the Roe Steel Tape #302 with polished chromeplated, sturdy welded steel case. Other Roe models feature cases in handsewn leather, and in metal-banded leather and leatherette. They have a reinforced rust resistant liner, precision winding drum, flush-folding handle, press button center and roller mouthpiece. All are available with 25, 50, 75 or 100-foot tapes; feet in inches and eighths, or in tenths and hundredths.

Get Roe Steel Tapes from your hardware dealer-orwrite us giving his name and



JUSTUS ROE & SONS

Makers of fine steel tapes since 1876

FATCHOGUE, NEW YORK

Volume 32 Number 6

CONSTRUCTION METHODS AND EQUIPMENT

ESTABLISHED 1919

JUNE 1950

Pay Dirt in This Issue

More than 200 pro	ecast 6	Horizon beams 13½ ft long are at USBR's Davis Dam.	42
Moved by carrier, 20	x 20-ft	form panels with attached % in lumber and labor.	46
	wed or	Construction ut, and concrete is cooled ate on Nebraska project.	49
	e hamr	Wall ner and two types of jets a drive 110-ft sheet piling.	54
	cludes	oring Run-Off closure of centrol dam, and cutting rock (altrace.	70
Construction News in Pictures	34	Labor Notes	83
Editorial	41	Paver Extrudes Concrete Slab	86
Straps Hold Column Forms	48	Novel Foundation in Houston	91
Piles Get Special Delivery	60	Delays Kill Equipment Output	94
Campbell's Maintenance Corner	64	Wheel Tractor-Scraper Economy	
Legal Decisions	78	New Equipment	. 122

ON THE COVER — Dwarfed by immense powerhouse and penstocks of Des Joachims Dam, a Northwest shovel loads blasted rock into end-dump Euclids to clear tailrace for Ottawa River's spring run-off. See page 70.

HAROLD W. RICHARDSON, Editor

Henry T. Perez, Managing Editor

New York: J. M. Connolly • Nelle Fitzgerald • Melvin Dean Washington: V. B. Smith

San Francisco: N. A. Bowers • L. L. Wise

Foreign News Bureaus—London • Frankfurt • Paris • Moscow • Tokyo • Melbourne
Rio de Janeiro • Mexico City

R. F. BOGER, Publisher

SALES REPRESENTATIVES

Howard Olsen, Business Manager; H. T. Buchanan, 330 W. 42nd St., New York; Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., Chicago; J. W. Olterson, 68 Post St., San Francisco; W. C. Bradford, 1510 Hanna Bldg., Cleveland; B. F. Horn, 2980 Penobscot Bldg., Detroit; W. E. Donnell, Continental Bldg., St. Louis; C. F. McReynolds, 1111 Wilshire Blvd., Los Angeles; Ralph Maultsby, Rhodes-Haverty Bldg., Atlanta and J. H. Allen, First National Bank Bldg., Dallas 1, Texas.

Other Sales Offices: 17th and Sansom Sts., Philadelphia 3; 738-39 Oliver Bldg., Pittsburgh; 1427 Statler Bldg, Boston 16; Aldwych House, London.

Member A.B.P.

Member A.B.P.

CONSTRUCTION Methods and Equipment, June 1950, Volume 32 Number 6. Published Monthly, price 35c a copy.

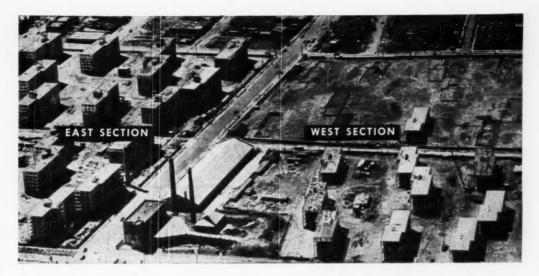
price 35c a copy.

Executive and Editarial Offices—330 West 42nd
5t., New York 18, N. Y. Copyright 1950 by McGrow-Hill Publishing Co., Inc., All rights reserved. Published Co., Inc., James H. McGrow-Hill
Publishing Co., Inc., James H. McGrow (18601948). Founder: Curtis W. McGrow, President;
Joseph A. Gorardi, Secretary-Treasurer, Paul
Mantgamery, Senior Vice-President, Publications
Division, Nichon Band, Vice-President and Direct
President and Direct or of Circulation. Cable
Address, "McGrow-Hill New York" Allow at

least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 330 W. 42nd Street, New York 18, N. Y.

Subscriptions	1 year	2 years	3 years
U. S. and possessions	\$2	53	54
Canada	4	6	8
Pon America	6	10	12
All others	1.5		3.0

Please indicate position and company connection on all subscription orders. Re-entered as secondclass matter July 14, 1949, at the Post Office of New York, N. Y., U.S.A., under the act of March 3rd, 1879. Printed in U.S.A.



High-Efficiency 'Incor' Performance

Speeds Erection of Ravenswood Houses - West Section



NEW YORK CITY HOUSING AUTHORITY
RAYENSWOOD HOUSES (West Section) Long Island City

Architect: THE FIRM OF FREDERICK G. FROST JR., New York

Ready-Mix 'Incor' Concrete
COLONIAL SAND & STONE CO., INC., New York

Contractor, Concrete Frame:

CAYE CONSTRUCTION CO., INC., Brooklyn, N. Y.

◆ One of New York City Housing Authority's largest projects is 2166-apartment Ravenswood Houses, Long Island City. Housing Authority projects are quality-constructed in every last detail—and they move ahead at driving speed. Because at today's costs, time saved is money saved—and how!

All last winter, frame concreting on the fourteen 6-story units in Ravenswood's west section clicked ahead on precise schedule—for CAYE CONSTRUCTION CO., INC switched to 'Incor' 24-Hour Cement. In cold weather, column forms were stripped in 24 hours, slabs in 48 hours. That kept the job right on schedule—and saved a complete set of forms. Big money, that, at today's form costs!

Came Spring—and things were running so smoothly that they kept on using 'Incor'. For high-efficiency 'Incor' performance knows no season. Straight around the calendar, 'Incor'* promotes the smooth-running, time-saving efficiency on which today's close-margin profits depend. Send for illustrated booklet, 'Cutting Concrete Costs'—write Lone Star Cement Corporation, 100 Park Ave., New York 17.



LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ALBANY BETHLEHEM, PA. BIRMINGHAM BOSTON
CHICAGO DALLAS HOUSTON INDIANAPOLIS JACKSON, MISS,
KANSA CITY, MO. NEW ORLEANS NEW YORK NORFOLK
ST. LOUIS PHILADELPHIA WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,500,000 BARRELS ANNUAL CAPACITY



Portable* BUILDERS TOWERS

many SAVES^COSTLY MAN-HOURS

Easily moved from job to job!

No wasted time!

No loss of material!

Cut Costs!

Speed Materials Handling!

Clyde Portable Builders Towers offer many money-saving and time-saving advantages. Time saved in the erection and dismantling, as compared to other type elevators, effects large savings measurable in cold cash! Clyde Towers are built for long, life, dependable performance, and eliminate maintenance and replacement costs of timber tower. But more than that, Clyde Portable Builders Tower are safety engineered to minimize construction job hazards. No acrobats or dare-devils are needed to erect a Clyde . . . it's assembled on the ground and raised into position with its own hoist!

For safety, for convenience, for large savings measurable in cold cash, get a Clyde! You can expect, AND GET, more when you buy a Clyde portable builders tower.

Check these Clyde Features

- ✓ Safety brake 'automatically locks load in in case of cable faiure.
- A 2,000 lb. capacity tower derrick available as extra equipment.
- ✓ May be transported on trailer wheels or loaded on a truck.

For Complete Facts. write for Bulletin A-11



mantles quickly di sections into 10

Ton loads. Quickly and safety hoist ton loads at hoist up to 178 speeds per minute. feet

Special



Tower is quickly and easily assembled, and cable reeved while tower is on ground. Only two men are required to handle and erect complete.



Tower is easily and quickly lowered and dismantled for transport. May be loaded on truck or towed on trailer wheels which attach to tower base.



CLYDE IRON WORKS, Inc.

DULUIH I. MINNESOTA

Hoista & Derricks & Whirleys & Builders Towers & Car Pullers & Handi-Cranes & Rollers

Barium

OVER 60% OF ALL EUCLIDS SOLD ARE REPEAT DRDERS ...

PROOF of CUSTOMER

PROFITABLE

PERFORMANCE!

Leading contractors and industrial users buy "Eucs"
because they are designed and built throughout
for heavy off-the-highway hauling. And because
Euclids are job proved for high production at the
lowest cost per ton or yard moved, owners add to
their fleets as more equipment is needed.

Nine out of every 11 Euclids built are still in use today. Their ability to stay on the job year after year under a wide range of operating conditions means more yards moved at greater profit.

Euclid owners also know they can depend on prompt, efficient service from Euclid's world-wide distributor organization.

Write for information on the complete line of Euclid equipment or see your Euclid Distributor today.

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

CITCING OF ONE OF

GULF PRODUCTS and **FINE SERVICE**

keep equipment rolling

on P. R. R. relocation project



ALL-WEATHER protection with Gulf lubricants and smooth power with Gulf fuels have played a big part in our fast progress on this big earth moving job," says D. R. Bartle, Job Superintendent. "We asked for quality petroleum products, and that's exactly what we are getting—keep them coming!"

Like so many other leading contractors, Hunkin-Conkey Construction Company has found that it's good *profit insurance* to use Gulf lubricants and fuels. Gulf lubricants provide an extra margin of protection against mechanical delays—and Gulf fuels help insure better engine performance!

Write, wire, or phone today and arrange to use Gulf quality products on your next job. They are quickly available to you through 1200 conveniently located warehouses.



Gulf Oil Corporation · Gulf Refining Company

GULF BUILDING, PITTSBURGH, PA.

Sales Offices - Warehouses

Located in principal cities and towns throughout Gulf's marketing territory

NOW-ANOTHER FIRST

FOR CHRYSLER INDUSTRIAL ENGINES!

Completely
Waterproofed
Ignition!

In weather which causes other engines to cough, sputter, stall or foul out, a Chrysler Industrial Engine keeps right on running. You won't lose production time—drying out the ignition system of a Chrysler—even if you turn a hose on it!

Coil, distributor, wiring harness, spark plugs are *waterproofed* to prevent moisture from causing short circuits.

Waterproof ignition is typical of the many extra values you get in a Chrysler Industrial Engine. Extra values which explain why Chrysler Industrial Engines outperform, out-last and out-economize similarly rated engines on all sorts of jobs everywhere. Yet, thanks to Chrysler mass production economies you can buy a Chrysler Industrial Engine for less money—and get quick service anywhere.

See your dealer or write us. Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan.

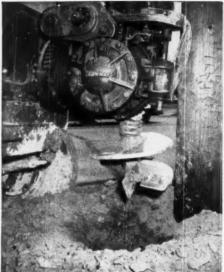
CHRYSLER

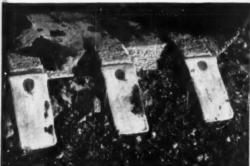
Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGRE

service life increased 5000%

with AMSCO® Hardfacing!





Where to look for money-saving hardfacing applications:

On parts subject to wear by abrasion, impact, heat or corrosion, such as:

Earthmoving Equipment • Farm Equipment
Oil Field Drill Bits • Sprockets • Dredge
Pump Shells • Materials Handling Equipment • Pulverizer Hammers • Punching,
Trimming, Forging Dies • Coal Cutter Bits.

Post Hole Digger now digs 206 holes in rocky soil before repointing

Just 4 holes was the former life of a new point and blade on this power-driven post hole digger. After hardfacing with AMSCO Tube Tungsite, the same blade and point dug 206 holes—51 times the former service!

Here's another example of big savings with AMSCO Hardfacing . . .

Lips and teeth of this dipper were given far greater resistance to impact and abrasion with AMSCO Economy Hardface . . . resulting in longer dipper life, lower handling costs per ton.

These are typical examples of tremendous savings made with AMSCO Hardfacing... savings in time, maintenance and money! Wherever any kind of part—from huge mining dippers to small drill bits—is subjected to impact or abrasion, you'll find that it pays to hardface with AMSCO Welding Products.

put LIFE finto service with AMSCO



AMERICAN MANGANESE STEEL DIVISION
385 EAST 14th STREET - CHICAGO HEIGHTS, ILL.



CHAMPIUN of

Contractors and Operators throughout the Country Proclaim the New TD-24 CHAMPION of Crawlers

The International TD-24 has proved itself CHAMPION of Crawlers. On job after job, the new TD-24 has won the admiration of operators for the ease with which it does work which other tractors cannot do. Contractor-owners are equally enthusiastic, for they see the TD-24 outworking and out-producing every other tractor in the field.

Greater power, and the weight and traction to match, plus new operator convenience and ease of control, give the TD-24 much more than an edge over any other tractor you might name.

Experienced operators and owners have this to say about the new TD-24: (names on request)

"In my estimation the TD-24 is the heavyweight champion of crawler tractors."

"The TD-24 works right along on slopes so steep we have to cut them down before other tractors can even navigate unloaded. TD-24's are fast tractors, easy to shift and have plenty of power. This combination really moves dirt...made us more money than any other tractor could."

"The TD-24 is a wonderful piece of machinery and I can't say enough for it. Our operators feel they are wasting their time when they run other tractors, for no other tractor built can compare with the work these TD-24's can do."

Visit your International Industrial Power Distributor and see what the TD-24 can do for you. You'll agree it's the CHAMPION of Crawlers—the one tractor you can't afford to be without, for profitable earthmoving.

INTERNATIONAL HARVESTER COMPANY
Chicago

JOB FOREMAN REPORTS SAVINGS

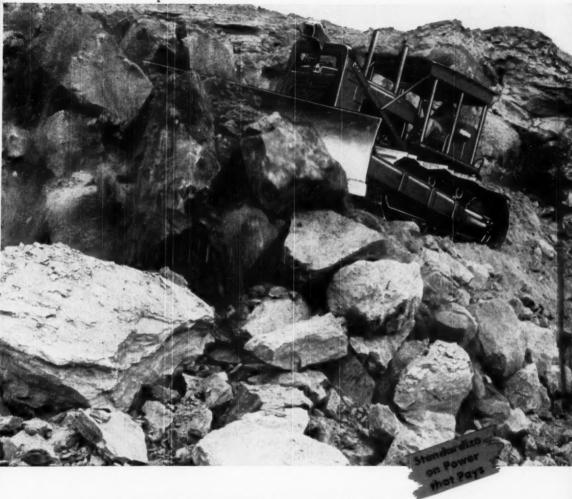
"It (the TD-24) is definitely outhauling every other tractor on the job," says the foreman on this 247,-000-yard stadium bowl job in Maryland. "It will do so much work that we are sure our job costs."







"Worth Two of Any Other Heavy Tracter," says Lindsey Belville, president of Greasy Ridge Coal Co., Greasy Ridge, Ohio, strip mine. "This is the best tractor I've ever used in my five years experience," says Warren Bare, the tractor operator shown working it in heavy rock. "It is the only one that will do everything I want it to," he claims.





NTERNATIONAL INDUSTRIAL POWER

CRAWLER TRACTORS . WHEEL TRACTORS . DIESEL ENGINES . POWER UNITS







Top performance for tough jobs!

Chevrolet P•L Truck performance consists of many things. There is Chevrolet design—brilliant and functional—design with a purpose. There is Chevrolet construction—sturdy and dependable—for lasting usefulness.

And there is Chevrolet power—power to deliver the goods—more power than Chevrolet trucks ever had before. Two great valve-in-head engines—the Load-Master 105 h.p. and the Thrift-Master 92 h.p.—make these the most powerful Chevrolet trucks ever built.

These new P•L models are far ahead in features, too; yet they cost surprisingly little to buy, to operate, to maintain. And that adds up to value—the kind of outstanding value that year after year makes Chevrolet America's fastest selling truck.

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICH.

LEADING WITH ALL THESE PLUS FEATURES:

TWO GREAT VALVE-IN-HEAD ENGINES: the New 105-h.p. Load-Master and the Improved 92-h.p. Thrift-Master—to give you greater power per gallon, lower cost per load
THE NEW POWER-JET CARBURETOR: smoother, quicker acceleration response

DIA-PHRAGM SPRING CLUTCH for easy action engagement
SYNCHRO-MESH TRANSMISSIONS for fast, smooth shifting
HYPOID REAR AXLES—5 times more durable than spiral bevel type

DOUBLE-ARTICULATED BRAKES—for complete driver control
WIDE-BASE
WHEELS for increased tire mileage
ADVANCE-DESIGN STYLING
with the "Cab that Broathes"
BALL-TYPE STEERING for easier handling
UNIT-DESIGN BODIES—precision built.

CHEVROLET

 P^*L^*

ADVANCE-DESIGN TRUCKS

Popularity Leaders

Chevrolet trucks outsell all others. In every postwar year truck users have bought more Chevrolets than any other make—proof of the owner satisfaction they have earned throughout the years.

Performance Leaders

The new Chevrolet P*L trucks give you high pulling power over a wide range of usable road speeds—and on the straightaway, high acceleration to cut down total trip time.

Payload L*
rugged construction and all-around economy of Chevrolet P*L trucks cut operating
and repair costs—let you deliver the goods
with real reductions in cost per ton per mile.

Price L*
selling price to high resale value, you're money ahead with Chevrolet trucks. Chevrolet's rock-bottom initial cost—outstandingly low cost of operation and upkeep—and high trade-in value, all add up to the lowest price for you.



Jaeger 3-Screed Paving Team

(Accurate Metering Screed on the Spreader, Transverse Screed and Diagonal Screed on the Finisher)

gets faster production and labor-savings never before possible on concrete slab

Combination Screw-Screed Spreader Works Close Behind the Paver

Diagonal Screed Finisher Can Safely Work Far Back, Allowing Surface to Condition Properly Before Finishing

100'-200'



Re-mixing spreader w : Reworks, compacts and spreads material evenly from form to form.

Initial strikeoff to approximate grade (all that any other spreader can accomplish.)

No. 1 - Metering screed Makes precision strike-off with 12" oscillating shoe. Corrects any excess or deficiency left by initial strikeoff. Saves cost of shovelers for carry-back and for costlier back-tracking with the pover.

No. 2-Transverse Screed: Works with just the right roll of material as "metered" by the Spreader. No piles to buck, Uniform compaction at all times.

No. 3 - Diagonal Screed: Pivots to any angle needed to carry ma-terial up-hill on pitched slab or super-elevated curves, compacts it solidly against higher form. Carrects any irregularities left by transverse screed because it meets material at different point. Also finishes stiff mixes without tearing.





THE JAEGER MACHINE CO., Columbus 16, Ohio

Note how the above Jaeger method fully mechanizes your operation, effects direct labor savings in front and in back of finisher, and insures faster, steadier, easier production of the maximum daily yardage your dual drum pavers can produce. Has eliminated requirement of a second finisher behind the spreader on high production work in several states.

Jaeger Type CSS Combination Screw-Screed Spreader: The only spreader that positively eliminates segregation and improves uniformity by remixing on the subgrade - and also accurately meters to the finishing machine by second strike-off with 12" oscillating screed. Same machine can both spread and finish concrete base for bituminous surfaced city streets. Widths 10-15, 20-25 ft. Also available without oscillating metering screed, if so desired.

Jaeger Type X Diagonal Screed Finisher: The only finishing machine that can finish flush to higher form on pitched slab and super-elevated curves. Screed angle instantly adjustable as required. Angle finishing also averages out any irregularities left by front screed and finishes stiff concrete without tearing. Widths 10 to 32 ft.

Ask your Jaeger distributor or send for complete Concrete Paving Catalogs





AGGREGATE SPREADERS

EGER engineered equipment PUMPS . MIXERS . COMPRESSORS . HOISTS

ASSURE DEPENDABLE OPERATION AT LOWER COST





TEXACO

Use the TEXACO air compressor oil recommended for your operating conditions

No <u>ONE</u> oil can lubricate satisfactorily under all the conditions of air compressor operation. So Texaco has developed a complete line of air compressor oils. When used as recommended, you can be sure of dependable, top-efficiency operation and lower maintenance costs regardless of the type of compressor or the operating conditions.

Your Texaco Lubrication Engineer, for example, will recommend Texaco straight mineral oils for normal conditions... Texaco inhibited oils for rust prevention... Texaco special heavy-duty oils where service is severe and carbon and gum formations are problems... and Texaco compounded oils if excess moisture is present.

Thus, use of the right Texaco air compressor oil

assures free rings... clean valves and clear air lines ... reduced wear for all moving parts... lower costs all around.

For longer drill life, and more footage drilled at lower cost, use *Texaco Rock Drill Lubricants EP*. These are "extreme pressure" lubricants designed to give full protection against wear and to guard against rust under the severest conditions.

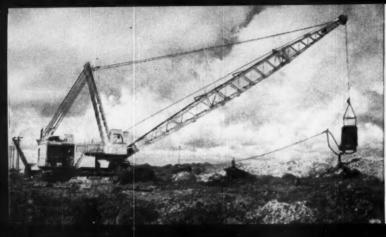
Let a Texaco Lubrication Engineer help you simplify and improve your maintenance lubrication procedures. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



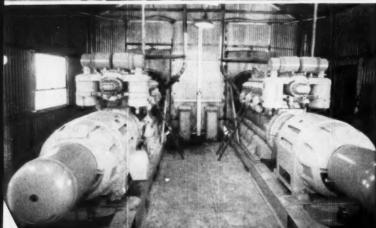
A D386 "Cat" Engine powers this Manitowoc dragline, with 6-yd. bucket and 120-ft. boom, building levee on Galveston Bay. Owned by McGinnes Bros. Construction Co., Houston, Texas.

'Cat" Engines



BUILT

This crushing plant, owned by Arthur R. Alvis, Butler, Mo., has a "Caterpillar" D375 Engine driving a Universal pulverizer. Capacity, 125 tons of road rock per hour.



Two "Cat" D397 Electric Sets, each with capacity of 314 kw., furnish light and power for Cedar Bluff Dam construction job. Contractors, Lytle-Amis & San Orr, Ellis, Kans. Back of the high preference for "Caterpillar" power on construction jobs is a long experience of profitable operation.

Construction men know they can depend on steady, day-in-day-out performance from "Cat" Engines and Electric Sets. And they know they'll get 24-hour service—anywhere—from "Caterpillar" dealers.

The right power for every type of job is now available in the complete "Caterpillar" line. There are ten Engines, ranging in size up to 500 hp. (maximum), and ten Electric Sets, up to 314 kw. (12-hour duty).

Over 150 manufacturers make "Cat" Engines available as power for their equipment. They know that quality power adds to the performance of their product—gives greater satisfaction to the user.

When you order new construction equipment, specify "Cat" Diesel power. Your "Caterpillar" dealer will be glad to show you how the big yellow machines will meet your requirements.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

FOR CONSTRUCTION MEN

LOOK UNDER THE HIDE

for the quality that pays off in performance!

The built-in quality of "Caterpillar" Diesel Engines doesn't show on the outside—but it shows up in performance. Just take a few examples of the hundreds of hidden quality features that give "Cat" Diesels their long life and dependability.



"Caterpillar" intake and exhaust valves are made of highly alloyed, heat-resistant steels. Their ample size and close machining and heat-treat specifications have resulted in thousands of hours of trouble-free valve operation. Valve and rocker arm design are matched to reduce wear. Valves in the D397, D386, D375 and D364 Engines have special hard facings on contact surfaces, and have valve rotators and hardened valve seat inserts to reduce seat wear.



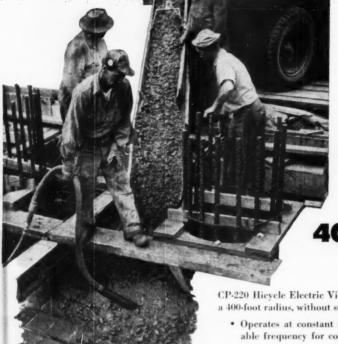
Fuel pumps are "Caterpillar"-designed and "Caterpillar"-built. Made of the cleanest high-chromium, high-carbon alloy steel obtainable, the pump plungers and barrels are diamond lapped. Pumps are heat treated to maximum hardness to give users thousands of hours of trouble-free, economical service. There is an individual pump for each cylinder. Pumps are free from adjustment and interchangeable.



The fuel injection valve offers owners maximum simplicity in design. Machined to extremely close limits, these valves are made from the finest quality materials—and are subjected to very detailed hardening processes. Valves are completely interchangeable and are adjustment-free. A large single orifice minimizes fouling, With the matched design of valves and precombustion chambers, owners use low-cost, non-premium fuels to get top economy.

CATERPILLAR

DIESEL ENGINES - TRACTORS - MOTOR GRADERS - EARTHMOVING EQUIPMENT



the Vibrator with the 400-foot cable

CP-220 Hicycle Electric Vibrators can be operated anywhere in a 400-foot radius, without stopping to move power unit.

- Operates at constant speed 10,000 v.p.m., the most suitable frequency for concrete placement.
- Built for one-man operation; has easily handled electric cable.
- Designed for concretes of 2" slump and over; walls, footings, columns, floor and roof slabs; precast piles and similar products.
- · Capacity of 30 to 40 cubic vards an hour.
- Extension hose handle permits use in forms 25 feet deep.
- · Equipped with waterproof switch.

Two CP-220 Vibrators are powered with a CP-2KW gasolinedriven Generator, 220-volt, 3-phase, 180-cycle. Generator can also be used to operate flood lights.

The complete CP line of electric and pneumatic vibrators provides just the right model for every concrete job. Write for full information.



With its half million square feet of floor space, Chicago Pneumatic's new Utica unit is the world's most modern plant for the production of pneumatic and electric tools.

Chicago Pneumatic Tool Company, Utica, N. Y.



CHICAGO PNEUMATIC

General Offices & East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES



Thermoid Research Gives Greater Flexibility and Wear-ability to New-Type Hose!

Thermoid has designed *Thermine* Air Hose especially for more efficient and economical use in drilling operations—from construction jobs to mining.

Increased flexibility allows greater freedom of movement and permits bending the hose easily around tight corners. A heavy synthetic rubber oil-proof tube is reinforced with heavy braided rayon cord. Smooth, extra-heavy rubber cover offers maximum resistance to abrasion and cutting by sharp rocks.

Thermine Air Hose is mandrel-built from $\frac{1}{4}$ " to $\frac{1}{2}$ " inclusive in 50 ft. lengths. Available at your nearest Thermoid Distributor.

Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Molded Products • Industrial Brake Linings and Friction Materials.

For Complete Satisfaction Specify Thermoid!



Main Offices and Factory • Trenton, N. J., U. S. A. Western Offices and Factory • Nephi, Utah, U. S. A. Industrial Rubber Products • Friction Materials • Oil Field Products

2 to 3 times longer

with these new Fatigue-Resistant

REPLACE YOUR OLD BOOM SUPPORTS with these new Tiger Brand FATIGUE-RESISTANT Boom new liger neams co. 1930 control pounds.
Support Assemblies. Field tests and laboratory vibration tests indicate at least two or three times the tion tests indicase at least two or three times the usual length of life under the most severe vibration

conditions.

An exclusive development of AMERICAN STEEL & WIRE COMPANY



life for boom supports

Tiger Brand Cable Assemblies

• Here is an "innovation" in boom support assemblies that effectively combats the most severe vibration on power shovels, draglines and cranes. Notice the novel thimble design which embodies an interwoven eye and open end pendant easily and quickly interchangeable on standard equipment.

This new design dampens vibration instead of concentrating it at one point. The result is two to three times longer life for boom supports and much greater safety.

The new boom supports are especially adaptable to installations where fatigue failures occur adjacent to sockets. They can be easily and quickly adapted to your present equipment because essential dimensions such as pin diameters, distances between ears, etc., are the same as for standard open and closed sockets.

Fatigue-Resistant Boom Supports are an exclusive development of American Steel & Wire Company. Send the coupon for complete information.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, ONIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM,
SOUTHERN DISTRIBUTORI
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



VIBRATION EFFECTIVELY DAMPENED HERE over a long section instead of being concentrated at one point.

	Steel & Wire (
Rockefell	r Building, De	pt. B-60			
Cleveland	13, Ohio				
Please se	nd me complete	informati	on on yo	or new Ti	ger Brand
Boom Su	port Assemblie	16.			
Name	*********		*******		
Title					
Company					
Address.					
Clev				State	

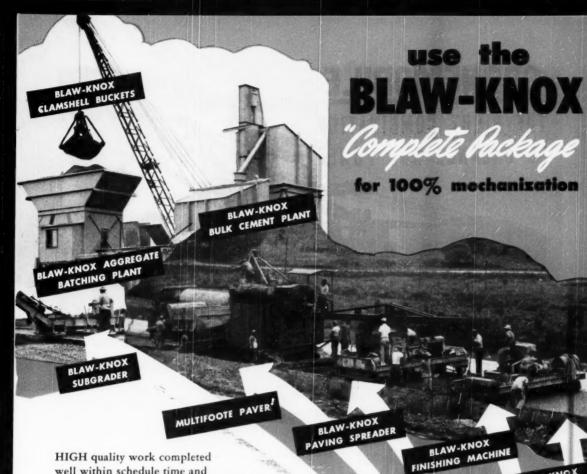


AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL





HIGH quality work completed well within schedule time and bids-that's what rings the bell with higher profits on every job you do. That's why the Blaw-Knox "Complete Package" of construction equipment rings the bell with so many contractors-it makes every job a 100% mechanized production line, with equipment you can depend on for speed, low maintenance, and consistent high capacity production shift after shift.

Every item of Blaw-Knox Construction Equipment has been designed, tested and proved to do its job with utmost speed and economy.

The Blaw-Knox "Complete Package" contains everything you need for any concrete construction joblarge or small-from handling material to finishing the slab. Your Blaw-Knox distributor will give you the whole "package" story-see him today!

BLAW-KNOX ROAD FORMS

the BLAW-KNOX

Concrete Buckets Steel Curb and Gutter Form Central Alixing Plants HI-Boy Trukmixers Steel Forms for dums, tunnels, etc.

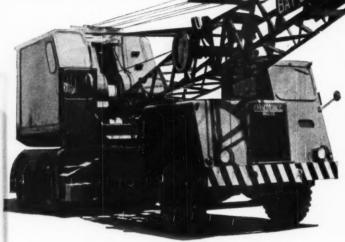
BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

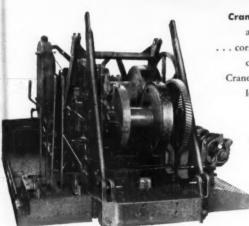
New York · Chicago · Philadelphia · Birmingham · Washington · San Francisco

<u>CRANE</u>MOBILE

THE RIGHT COMBINATION OF BALANCE AND POWER



to lift 22,450 lbs. with 90 ft.
boom at 20 ft. radius
to use 140 ft. boom and jib
to set a 25 ton load gently
and accurately



craneMobile Can Do It! — It's BAY CITY designed and built from the wheels up . . . with proper balance . . correct weight . . . plenty of power . . . 25 ton capacity . . . plus outstanding operating features. The CraneMobile can handle longer reaches and heavier loads safely and dependably * * * * Look inside the cab . . . see the neat, compact arrangement of the machinery assembly. Look at the rugged construction in every detailed part. See your nearest dealer or write us. BAY CITY SHOVELS INC., BAY CITY, MICHIGAN.

The CraneMobile is available in 5 sizes with crane capacities up to 25 tons. For complete details, write for catalog.



BAY CITY



SHOVELS . CRANES . HOES . DRAGLINES . CLAMSHELLS



EARTH MOVING and construction equipment like this powerful bulldozer takes severe punishment in even normal operation. Protect it from excessive wear...improve its performance with the finest lubricants available.

Cities Service has a remarkable new line of all-weather, all-purpose lubricants. These top quality petroleum products slash maintenance costs . . . reduce equipment down-time . . . step up the efficiency and power of all units under

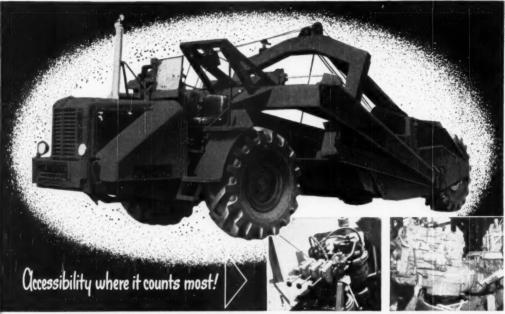
all kinds of heavy duty operating conditions. Learn today how you can gain big increases in the productive capacity of your units. Mail coupon below.



VALUARIE FREE BOOKLET

ISSELCETION.	Our new manual "Earth Moving and Con- struction Machinery Lubrication" is a handy fact-filled guide to perfect lubrication. Write today.
	CITIES SERVICE OIL COMPANY Sixty Wall Tower, Room 602 New York 5, New York
Name	
Company	
Address	
City	State

EASIER MAINTENANCE is a vital part of Terra Cobra PERFORMANCE LEADERSHIP



CABLES always accessible. Straight reeving, fewer sheaves, all away from dirt. Result: Longer cable life, less "down time."

Where a few minutes of "down time" can quickly eat up the profits, rugged dependability and simplified maintenance are essential in earthmoving equipment. That's why reserve strength and accessibility have been engineered into every feature of the Wooldridge Terra Cobra. Every major component can be easily reached or removed without disturbing unrelated parts. Cost-wise contractors have proved that this means less servicing, faster maintenance, more productive time, higher profits. Ask your Wooldridge distributor for complete details—or write today for Bulletin No. TC-705.

WOOLDRIDGE MANUFACTURING CO.

Sunnyvale, Calif. • 4710 W. Division St., Chicago 51, Ill.

POWER CONTROL UNIT easily adjusted from outside without special tools. Entire assembly removable without disturbing other units.



RUGGED TRANSMISSION may be inspected or removed without disturbing engine, differential or other major units.



DEPENDABLE CUMMINS DIESEL

ENGINE requires minimum main-

tenance, easily inspected or

MASSIVE DIFFERENTIAL accessible at all times. May be removed in a matter of minutes without as fecting transmission.

Scrapers Bulldozers · Rippers · Power Control Units

WOOLDRIDGE

EARTH MOVING EQUIPMENT

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB



GARDNER-DENVER

Mud can't hurt the Gardner-Denver VP4
Pneumatic Sump Pump. Designed on a new
principle of TOP-SUCTION—the VP4 can't
 "dig in"—won't bury itself in a muddy
 sump—won't block inlet flow.
Top-suction also eliminates one of the most
common causes of pump failure—breaking of
the pump shaft seal because of water pressure.

Top-suction keeps all dirt and water away
from the oil seal, bearings and air motor—
 actually pulls lubricant into the seal.
 Write for complete information
 about this better sump pump.

GARDNER-DENVER

Since 1859

Gardner-Denver Company, Quincy, Illinois

In Canada:

Gardner-Denver Company (Canada) Ltd., Toronto, Ontario





HEAVY-DUTY 250 Trenchliner is a 15-ton excavator that digs up to 12½ 'deep, 16 to 42" wide ... excavates 1½ to 3½ cu. yds. per minute, depending on depth, width and materials. Leaves trench clean, ready for pipe.



POWER TO DIG DOUBLE TRENCHES is built into the 310 Trenchliner. It will handle two bucket lines, dig a 6' wide box sewer at one pass. With short and long boom, it can dig step trench in single operation.



- Off-Set Boom Shifts from Side to Side . . . digs as efficiently behind either crawler as it does in center position. Shifts easily, smoothly, because boom rides on rollers.
- 2. Ladder Boom Telescopes... quickly changed for depth variations. Locks securely at any point of adjustment.
- Conveyor Deposits on Either Side . . . shifts by power in less than a minute. Arc makes it easy to reach up into trucks. Center-guided conveyor belt (standard on Models 221 and 250) prevents end wear on belt, assures proper alignment.
- 4. Power Flow Simple, Direct. . . gets maximum power to the digging end. Easy to control, simple to maintain.
- 5. All Gears Completely Enclosed . . . machine-cut gears, sturdy shafts, in one closed case, in continuous oil bath.
- Tractor-Type Crawler . . . high rail-type crawler pad, keeps drive sprockets, chains, and lower rollers out of mud. Easily, simply adjusted. Low ground pressure. Less than 7 lbs. per sq. in. on 221 and 250, approx. 9 lbs. on Model 310.
- 7 Arched Frame... improves digging, travel balance, distributes weight on solid ground, well ahead of buckets.

CUT WITHIN 10" of fences, trees, buildings with Parsons 221 Ladder Trenchliner. Off-set boom is shiftable across the full width, lets Trenchliner side-step obstructions. Reversible conveyor discharges spoil on either side. Model 221 digs to 81/4' deep ... 16 to 36" wide.

8. Friction Clutch Control for boom-hoist drive on 221 and 250 provides positive, finger-tip control of boom digging depth adjustments. Independent of other operations.

for assignite Treatment forth from your Farmer Distributor . . . wal, too, about ration-fined Model 40

PARSONS GOMPANY
NEWTON, IOWA - Keeleiles Subsidiery

TRENCHLINERS'

FOR YOUR HEAVIEST TRENCH EXCAVATION on swer, gas and water main projects, you can keep profits up and costs down with this big Parsons 310 Trenchliner. It's built heavy-duty in every detail . . . digs up to 15' deep, 54' wide, has 45 digging speeds from 8' to 186' per minute. With special dual boom, Model 310 can dig up to 6' wide.



KWIK-MIX Bituminous MIXERS



More Batches Per Hour, Even Quality Mix

Kwik-Mix bituminous mixers are easily adaptable from portable, rubbertired machines to stationary plant operation. One man handles complete operation of either 10 or 14 cu ft. models. Other advantages include easy loading, non-tilting drum, fast and thorough mix, accurate control. Tower loader is optional equipment.

KWIK - MIX
COMPANY
Port Woshington, Wisconnie

JOHNSON Single Silo FOR BIG STORAGE

All-Welded, Portable Cement Handling Plant

Provides capacity for 254, 373 or 492 bbls. Screw conveyor and bucket elevator, box car or truck receiving happers, electric bin signals, aeration diffusers. Takes one or two 1000 lb. batchers. Write for more facts.



KOEHRING for PULL SHOVELS



Wide Trenches Need No Shoring

When soil conditions call for wide trenches, when rocks and boulders make use of trencher impractical, check on Koehring Pull Shovels. Available in ½ yard, ¾ yard and 1½ yard sizes. Fully convertible to shovel, crane or dragline when trenching job is diene. Heavy-Duty.

KOEHRING

COMPANY MILWALIKE TO WISCONS



RICHMOND GIVES YOU EXACTLY THE RIGHT ANSWER TO EVERY FORM-TIEING REQUIREMENT

Richmond has perfected dozens of devices to meet specific needs in concrete form work. Here are three products which have been found to be useful on most jobs.

RICHMOND PANEL-TYS

are used to tie together the endstuds of adjacent panel forms. There is a studs of adjacent paner rooms, the a large WEG loose-fitting washer at one end. The Tyholder engages at the other.



RICHMOND BUTTON HEAD PANEL-TYS

are useful when the most exact positioning is required. The design eliminates side slippage. The end is notched for the Tyholder. Also useful for tieing WEG in ledgers.



RICHMOND SNAP-TYS ANCHORS

have a semi-circular hook providing positive anchorage in concrete. These are I" break back type with a flat guide washer to guage correct position for anchoring sill blocks for construction bracing.



HOW COME WE'RE SETTIN' SO MANY JOBS LATELY ?

THE BOSS SAYS RICHMOND HELPS HIM DO A BETTER JOB IN LESS TIME AND FOR LESS

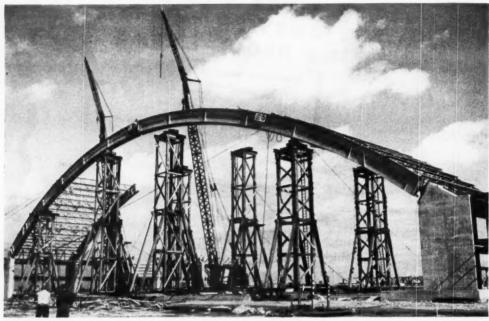


INSIST ON RICHMOND AND BE SURE IT'S RICHMOND!

ANCHOR CO. INC. 838 LIBERTY AVENUE - BROOKLYN 8, N.Y

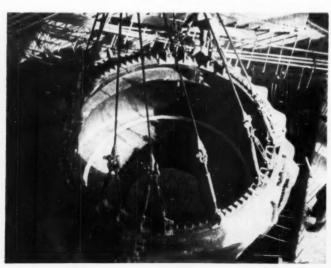
RICHMOND KNOW-HOW-DEPENDABILITY-SERVICE-ESTIMATES & JOB PLANNING

Construction News in Pictures...



WIDE HANGAR—Record-span steel arches (300-ft. clear) are erected for hangar at New York International Airport.
Two Manitowoc Speedcranes hold arch segments by lifting eyes as men insert center pin of three-hinged arch. Timber falsework

towers, with attached ladders for safe climb to high steel, held arch for field-splice riveting at quarter points. American Bridge Co. is sub for Stock Construction Co., New York, on 219x1,148-ft. triple-hangar.—Port of New York Authority Photo



HUGE PUMP—Scroll case for one of six 350,000-gpm, 84-in. pumps driven by 22,500-hp motors is lowered into Tracy pumping plant of California's Central Valley Project. Pumps will raise Sacramento River water 200 ft. to 120-mi. canal.—USBR Photo



HIGH HAMMER—Tough driving required hammer too big to fit in leads, and piles too long to fit under hammer. So Raymond Concrete Pile Co. puts hammer beyond leads in sliding outrigger, sinks piles to hammer's reach with inverted cup at top.



Ten Years Ago...

in August, 1939, this concrete test paving was laid in Second Avenue North. Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section. laid at the same time, was made with Atlas Duraplastic—the first commercial use of the air-entraining

portland cement originated and developed by Universal Atlas.

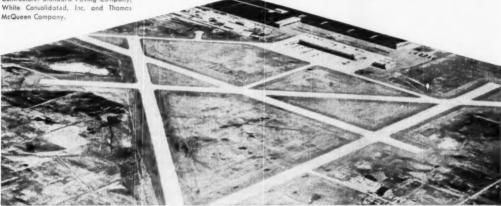
Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thur-

ing weather and the scaling action of de-icing salts. Longitudinal

caled cound AIR-ENTRAINING PORTLAND PORTLAND CEDING application air-entraining leveloped by Universal Atlas.

For example: O'Hare Field (formerly Douglas Airport), Park Ridge, III. Duralbatic used exclusively. Placed 1942-43, Despite heavy traffic of war and peace ...and the rigars of seven tough winters... paving remains durable and highly scale-resistant. Designed and supervised by U. S. Engineers and the Austin Company; Contractors: Standard Paving Company, White Consolidated, Inc. and Thomes

concrete paving of all kinds prove DURAPLASTIC* makes better, more durable concrete at no extra cost



Veteran airport or famous highway, country road or city street, simple sidewalk or service alley...millions of square yards of concrete paving of all kinds...have been proving, since 1939, that Atlas Duraplastic air-entraining cement makes better concrete, more durable concrete, at no extra cost.

Better concrete because Duraplastic requires less mixing water for a given slump; makes concrete more workable, more plastic, more uniform. The more plastic mix dumps, spreads, screeds and finishes easily; permits finishing closer to the paver; allows earlier protection for curing.

More durable concrete because Duraplastic minimizes segregation and bleeding; fortifies concrete against freezing and thawing; renders concrete highly resistant to the scaling action of de-icing salts.

At no extra cost because Duraplastic sells at the same price as regular cement; calls for no additional materials, no unusual changes in procedure. Duraplastic provides the proper amount of entrained air by intergrinding with the cement the precise amount of air-entraining agent needed for satisfactory field performance. It complies with ASTM and Federal Specifications. Send for NEW FREE BOOKLET, "A Decade of Atlas Duraplastic Air-Entraining Portland Cement." Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

CM-D-101

ATLAS DURAPLASTIC

MAKES BETTER CONCRETE AT NO EXTRA COST

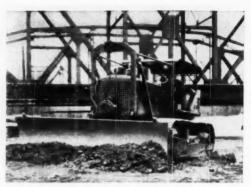
UNIVERSAL ATLAS PRODUCT

"THE THEATRE GUILD ON THE AIR" - Sponsored by U. S. Steel Subsidiaries - Sunday Evenings - NBC Network

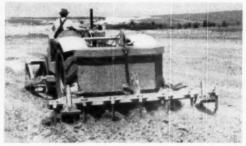
CONSTRUCTION NEWS ... continued



TOWER PAVER—Vertical mast on Ransome 27E paver lifts air entrained concrete for chuting to forms on S&W Construction Co.'s Woodlands apartment project in home town of Memphis. Forms are lined with Presdwood to minimize concrete finishing.



CHANNELER—Rampaging Coguitlam River in British
Columbia cut new channel behind bridges, so Allis-Chalmers HD19 digs bed to bring it back to old course and save two spans.



DOUBLE-ENDER—Counterweighted Caterpillar DW-10 carries blade in front, rake in rear, to work 8,000-ft, rolled embankment at Bonny Dam. Utah Construction Co. is building \$10,300,000 USBR dam on South Fork of Republican River near Hale, Colo.



CELL COFFERDAM—Main river pier for 2,000-ft. four-lane highway bridge over Monongahela River at Belle Vernon, Pa., is built within cellular sheetpile cofferdam. Absence of internal

bracing gives free movement of equipment and materials. Dravo Corp. dredged 33,000 cu. yd. from this and second similar cofferdam for other river pier to reach rock 70 ft. down.

KNOW ABOUT NEW "FLEETWELD 72" for high speed production welding?

- Welds Faster. Operates efficiently over a wider current range than conventional E-6012 electrodes. Operates best at currents substantially above conventional E-6012 rods... and without overheating.
- Welds Easier. Unique arc characteristics assure proper root penetration on fillet welds without sacrificing speed . . . minimizes the danger of cutting away the top edge on lap welds (Fig. 2).
- Goes Farther. "Fleetweld 72's" near flat bead shape (Fig. 1) means maximum weld strength without excess weld metal . . . eliminates piling up of weld metal so common with other E-6012 electrodes to give greater weld length per rod.
- Ideal On Poor Fitup. Permits easy bridging across gaps at high currents and high speeds without burning through parent metal to simplify fabrication and fitting of parts in fixtures for welded assembly.

- Needs Less Cleaning. Smooth, uniform operation over broader current range minimizes spatter . . . On many types of work, slag is practically self-cleaning.
- Premium Performance At No Extra Cost. New "Fleetweld 72" combines the benefits of greater ease in

NEW LINCOLN
"FLEETWELD 72"
E-6012 ELECTRODE

Available in 1/8, 5/2, 3/6, 7/2
1/4, 5/6 diameter. For use
with AC or DC

producing properly shaped bead with higher welding speeds to cut your welding costs... yet new "Fleetweld 72" sells at no increase in price over its famous E-6012 welding partner "Fleetweld 7".

VERSATILE FOR WIDE RANGE OF WORK as in the fabrication of machinery parts, automobile frames and bodies, storage tanks, shop fabrication of structural members... and for all types of flat-position repetitive work where duplicate welds must be made in a minimum of time.





Fig. 1. Proper Weld Metal with "Fleetweld 72's" near flat bead means greater "mileage" from each electrode.

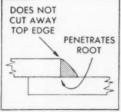


Fig. 2. Prevents Cutting-Away of top edge on lap welds... weld flows up to catch top edge without sacrifice in speed. Prevents piling up of metal.

GET THE FACTS Write for free Procedure Bulletin

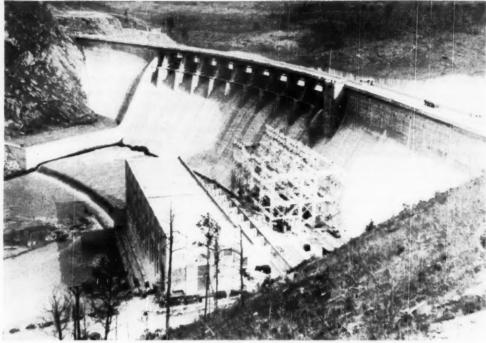
THE LINCOLN ELECTRIC COMPANY

Dept. 174, Cleveland 1, Ohio

Sales Offices and Field Service Shops in All Principal Cities



CONSTRUCTION NEWS ... continued

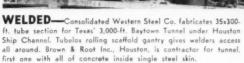


COMPLETED—First 36,000 kw generator has been put into service on multi-purpose Allatoona Dam on Etowah River, near Cartersville, Georgia. Massive \$41,000,000 dam, built by National

Constructors, Inc., took more than 500,000 cu yd of concrete and will back up 389,000 acre-feet in its storage reservoir. Georgia Power Co. has contract for power.



DRILLED—Jackhamer slung on adjustable frame from trailer, which also carries Ingersoll-Rand 105-cfm. compressor, drills road slab for dowels to widening strip. Rigged by Bero Engineering Co., Buffelo, N. Y., on Rochester highway job, it cuts 500 1 1/16x6-in. holes daily, increasing production tenfold.



. Sizes for All Uses ...

Austin Overshot Loader





4 SIZES, 4 CAPACITIES, Low in Cost

Model 4-C 1 cu. yd. cap.* for tractors with 9,500 lb. min. d.b. pull

Model 6-C 11/2 cu. yd. cap. 6 for tractors with 15,500 lb. min. d.b. pull

Model 7-C 21/2 cu. yd. cap.* for tractors with 21,000 lb. min. d.b. pull

Model 8-C 312 cu. yd. cap.* for tractors with 28,000 lb. min. d.b. pull

*rated bucket capacity





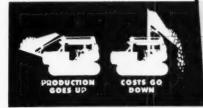
Shuttle loading with your tracktype tractor saves time and money. There is no swinging and blocking, and single-lever control of the Austin Loader permits simultaneous operation of tractor and loader. Fuel consumption is comparable to dozing operations.

Power is by a Caterpillar Cable Control system for raising and lowering the bucket. Chain and Cable transmission gives even tension at both sides, maximum power at start of the loading cycle and maximum speed the rest of the way.

For Underground Mining or Surface Operations

All Austin Overshot Loaders for surface operations are designed to dump into any standard earth hauling unit, with adequate clearance, and to transport easily on all highways. For underground mining, clearances are built for mining facework and tunnelling with customary mine haulage equipment. Prices are the same for both types.

WRITE FOR LITERATURE AND NAME OF YOUR NEAREST DEALER



John Austin, Inc.

DENVER, COLORADO

Cable Address: "FORTRADE," DENVER Export Division: P. O. Box 5043, Terminal Annex, Denver 17, Calorado, U.S.A.



Each of these job-proved Goodyear tires has a specially engineered tread and body to handle best a particular type of construction hauling need—each, in its proper type of service, cuts tire cost per mile,

steps up schedules, provides longer-lasting performance. Proof is the fact: More tons are hauled on Goodyear tires than on any other kind. Remember, always BUY and SPECIFY Goodyear—it pays!

GOOD YEAR

CONSTRUCTION METHODS AND EQUIPMENT

Efficiency, Where Art Thou?

OVER THE LAST YEAR a joint committee of the Highway Research Board and the Public Roads Administration has issued several reports of time studies on equipment performance. Operations of seven classes of equipment were carefully observed on 33 highway projects.

Summaries of the reports, published on page 94 of this issue, don't make pleasant reading for a construction industry that prides itself on mechanized efficiency. The actual average productive time for all equipment on all jobs is a sorrowful 39%. Average production for the various types of equipment varies from a low of 21% for bituminous pavers to a high of 59% for crawler tractor-scraper units. These are average performance figures—the range on individual jobs runs as low as 11% to a high of 78% actual production time.

The above figures are based on all time lost, including weather delays. Weather accounts for an average of 27% time loss, with ranges from 15 to 54%. Weather, of course, is beyond the control of the contractor.

To determine the productive time of equipment exclusive of weather delays, we have analyzed the committee's compilations further. Our trusty slide rule comes up with some interesting answers.

We find that the over-all average of all equipment on all jobs is only 54% productive time even in good weather. Here are the averages for each class of equipment: crawler tractor-scraper units, 79%; asphalt plants, 63%; wheel tractor-scraper units, 60%; dual drum paver outfits, 52%; power shovels, 51%; Euclid loaders, 48%; and bituminous pavers, 26%. Mind you, these are actual productive times worked in good weather.

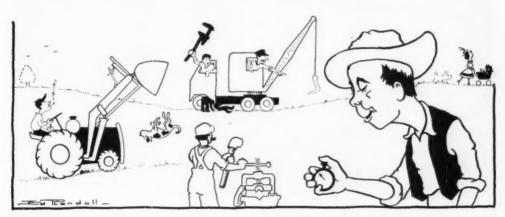
An average of 10% of all delayed time is caused by equipment repairs and maintenance, with a range of 4 to 21% downtime for the various types of machines. While the reports do not indicate how much, if any, of the repair work is done during weather shutdowns, it is assumed that considerable equipment maintenance results in downtime with result-

ant loss of production. Here is proof of need for preventive maintenance—the theme of our special equipment maintenance issue to be published next month.

Most other delays seem to indicate the need of increased vigilance in management and supervision of the jobs. Here are some of the delays encountered—no water at the paver, no asphalt at the central plant, no trucks at the shovel, hold-up of expensive equipment for slope trimming, lack of hauling units—the list is long and embarrassing.

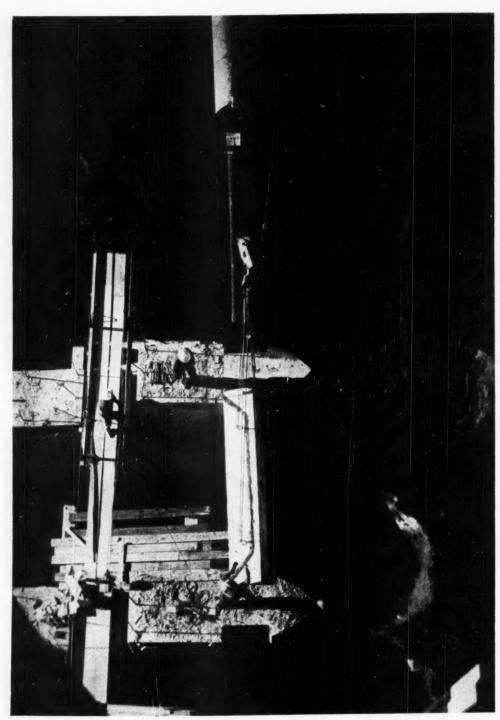
Possibly at times such delays are excusable. But with equipment operation costs soaring, and with equipment production the only pay-off on the job, delay excuses must be good to compensate for their costs. With determined effort, contractors can surely come closer to getting the efficiency out of equipment that the manufacturers build into it.

Rich

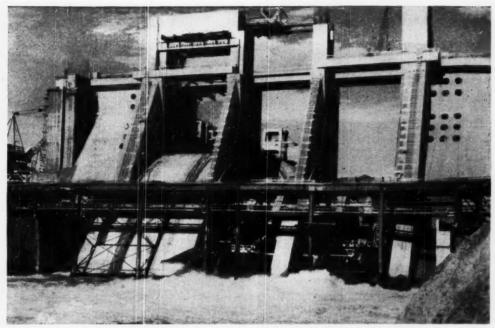


SPIKE SEZ: Glory Be! I never realized how our downtime on equipment adds up until I put this stopwatch to work. We gotta keep these rigs

rolling if we're going to meet the low prices that tough competition is throwing at us these days.



DOWN INTO MURKY DEPTHS of Colorado River goes first concrete stoplog to close off temporary diversion through spillway slots in use since June, 1948. Steel rod hooked into eyebolt on



DIVERSION OF COLORADO at Davis Dam was planned far in advance for concrete stoplog closing. River has been diverted for 21/2 yr through two of the three 50-ft spillway bays, each divided into three slots by intermediate piers. When stoplogs close slots to spillway crest, water flows through radial gate sluices at each

side of the spillway. Closing of downstream end of slots is by steel plates hinged at top, some already to be dropped shown here, which will serve as lower cofferdam for filling of slots with concrete to crest level. Each spillway bay will be topped by 50x50-ft gate.—R. G. Manning Photo.

Concrete Stoplogs Stop Colorado River at Davis Dam

FOR THE FIFTH TIME the mighty Colorado River has been bottled up and made to lie down and be good—this time at Davis Dam where final closure was made early this spring. The stream was first corralled at Laguna Dam in 1909, and later at Hoover, Imperial and Parker Dams.

At Davis Dam the closure was made with 204 concrete stoplogs 24x30 in. and 13½ ft long. They were placed in six sluiceways left in two of the three spillway bays in the forebay structure built at the outlet end of the permanent diversion channel.

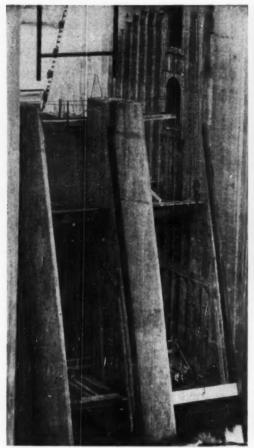
Sills at bottom of sluiceways were El 507. Placing of 34 stoplogs in each sluice brought the closure to El 570. When the reservoir was raised to El 542, water started flowing through two permanent discharge sluices controlled by radial gates at either side of the spillway. Overflow crest level of the spillway is El 597, but water will be kept below top of stoplogs until the structure is complete. Each spillway bay will be topped with a 50x50-ft steel gate. When these gates are closed a 60-mi lake will be created, extending upstream to the Hoover Dam tailrace.

Final closure of the river by concrete stoplogs was planned far in advance. When the three-bay spillway was built, prior to turning the river into the diversion channel (CM&E August 1948, p. 92) two bays were left open and divided into three sluiceways each by

piers. Sloping slots to accommodate the stoplogs were formed in the structure walls near the upstream face. To seal off the downstream end of the diversion sluices so the spillway could be completed in the dry, steel gates were installed, fastened to hinges at the top so they could be dropped into place to serve as a downstream cofferdam after the stoplogs were set.

Each stoplog weighed about 6 tons and was fitted with seals on both bottom and top faces. Top seal was a 2x4-in. timber, covered with mastic, embedded flush with the concrete surface. Bottom seal was a ¼-in. plate embedded to protrude ½ in. to be forced into the top seal below by weight of logs above. Two hairpins were cast into the top surface of each log for lifting; notches were formed out of the bottom face to accommodate these loops protruding from the stoplog below.

Logs were hauled from the casting yard to spillway by Hyster lumber carriers. At the site they were handled by a traveling gantry operating from the spillway bridge. Two cable slings, one end of each

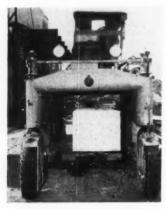


TIED TO LIFELINES for safety, workmen on temporary platform just above rushing waters, in telephone touch with crane foreman, manipulate hand lines to jiggle stoplogs down sloping guides.

—ILSRP Photo.



ALL DONE! Total of 204 concrete stoplogs has been placed in six diversion slots, raising reservoir level to top of radial gate controlled sluiceways at sides of spillway. Note downstream plates ready to be dropped into place to seal lower end of diversion slots



SIX-TON CONCRETE STOPLOGS, 24x30 in. and 13½ ft long, are hauled to spillway by Hyster lumber carrier.—USBR Photo.

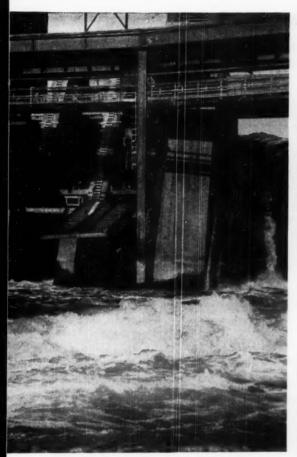
lashed to the hook, were passed through the lifting eyes and looped back over the hook. A hand line, passed beneath the loop ends on the hook, pulled the slings clear of the hook when the logs were landed, allowing them to be pulled out of the eyes under water.

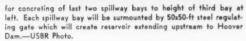
Trouble was experienced in placing the logs at the start. Because of the vertical lift on the units, it was difficult to thread them into the sloping slots and make them ride down the grooves. Also it was found impossible to make them seal properly under their own weight in the swift water.

These troubles were easily overcome. A hole was drilled into the center of the upstream face of each log and a third lifting eye was sealed into the hole with sulphur compound. Then, in lifting the modified logs, a hooked bar was inserted into the third eye and fastened to the crane hook through a jack come-along for adjusting the log to the correct tilt to enter the sloping guide slots. Slacking off on the crane hook released the bar under water.

To help seal the units in the swift water, a heavy steel frame persuader was built with pipe legs that bore against the top of the log. This additional weight, handled by a second crane on the bridge, successfully pushed each log down into place with the proper seal.

The stoplogs were placed under a leisurely schedule so as not to interrupt a minimum river flow for downstream requirements. All concrete work on the spillway is now complete.







PERSUADER to force logs down guides and into tight seal under water is weighted pipe frame handled by second crane on spillway bridge. Ram was devised after difficulty was encountered in sealing first stoplogs.—R. G. Manning Photo.

The Davis Dam project will be completed this year except for the last of five 45,000-kw generators and part of 1,000 mi of transmission lines. The main dam across the Colorado River channel, a 3,670,000-yd earth and rock fill 200 ft high and 1,600 ft long, was finished up last fall. Powerhouse, spillway and control structures are at the outlet end of an excavated diversion channel. Total cost, to be repaid by power sales, will be \$114,000,000.

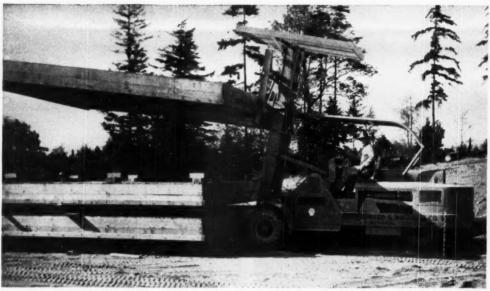
H. F. Baumeier is construction engineer for the U.S. Bureau of Reclamation at Davis Dam. H. E. Williams is project manager and T. L. Terry is general superintendent for the combination of contractors headed by Utah Construction Co.

Octopus Lifter Grabs Curved Surfaces

A FLEXIBLE LIFTING PAD, patterned after his well-known vacuum pad, has been developed by Karl P. Billner, president of Vacuum Concrete, Inc., Philadelphia. The device—dubbed the Octopus Lifter—consists of five suction outlets in each of several thin steel plates with a fabric seal between lifting plate and object being hoisted. Air suction lines from each outlet lead to a vacuum pump manifold.

The hoisting arrangement is a continuous-line multiple-point lift sling reeved through a strongback and the manifold assembly. The lifter adapts itself readily to curved surfaces.—Wide World Photo



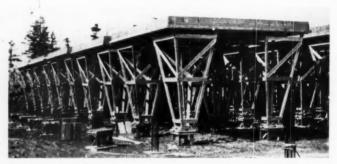


EXTRA LONG FORKS on 8-ton Gerlinger carrier hoists blocked-up 20x20-ft form pane's from yard storage as start of multiple-use form

assembly on Seattle suburban building development. Top frame on hoist later carries completed form assemblies.



TOWER LEGS are set on mudsills for first floor form setup. Towers are adjusted by hydraulic jacks, then wedged up on blocking.



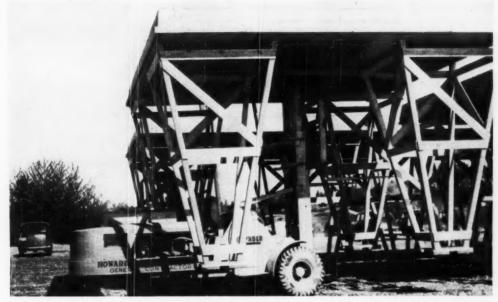
COMPLETED PANEL assemblies for a section of first floor forms. Columns are poured separately in Sonotube paper forms, after beam forms are filled in between floor slab panels. Panels are reused up to ten times. After each use, beam forms are stripped out and panels are removed by lift truck. Varying ground levels permit truck to enter upper floors on ramps for similar installations above ground level.

Big Fork-Lift Handles Panel Floor Forms

SAVINGS UP TO 80% in lumber and labor are reported from a big suburban shopping center at Seattle by use of 20x20-ft panel floor forms handled by a Gerlinger carrier equipped with extra long forks and a platform lift. The forms, mounted on four timber tower legs for each panel, were reused up to

ten times. Panels were made up of 1x4-in center matched flooring on 2x8-in. joists 2 ft c-c. In place, the panels were set 4 ft apart to permit forms for a 4-ft wide beam to be supported on rails on the panel sides.

After the site was prepared and building column footings were



AFTER PANELS are mounted on four timber tower legs they are moved to position in building by elevator mast on carrier. Beam

forms will be supported on rails on sides of floor panels. Columns are poured in advance of floors and beams.

poured, the carrier moved the form assemblies into place, setting them on mudsills. Panels were leveled by hydraulic jacks on the mudsills, then were blocked up with wedges and the hydraulic jacks removed.

Following placement of floor forms, concrete for the columns was poured in Sonotube paper forms. The 5³4-in. slab and 13³4-

in. beams were then poured. When the concrete had set, the carrier moved back in between the columns. Then the wedges were knocked out and the carrier took the floor slab form either to the storage vard or to a new site.

These forms were first used on a three-story, 400x400-ft department store building with 69,000 sq ft of

floor slab. The entire project will have 480,000 sq ft of floor slabs and roof and some 80 forms were assembled for the job. The forms were developed by C. J. Williams, project superintendent for the contracting firm of Howard S. Wright & Co. The job is the North Gate suburban shopping center being built for the Nortgate Co., Inc.

Rugged Going for Cable Outfit in Cascade Mountains

DEEP IN THE WILDERNESS of the Cascade Mountains in Washington a cable-laying train of three Allis-Chalmers HD19 tractors, a plow and cable reel struggle through a tough stretch of ground on the 130-mi underground line being laid between Seattle and Yakima by Pacific Tel. & Tel. Co.

Here is the rear unit of three big tractors hooked together in tandem to pull the plow and reel. In bad going such as this, the tractors cut loose from the plow, run ahead a ways and then with tracks locked, pull the cable layer ahead with the rear-tractor winch.

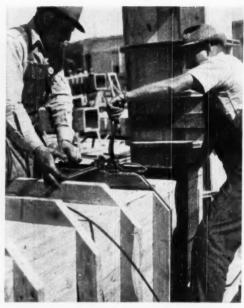
The job is part of a 4 million dollar improvement program.



June 1950 - CONSTRUCTION Methods and Equipment - Page 47



WITH STEEL CLAMPS to hold it square temporarily at ends, column is tied together with steel bands over wooden wings, toe-nailed lightly to sides. Band is brought up taut and . . .



... SEALER IS APPLIED with double clips staggered on all four sides of form. Simple twist of claw hammer breaks bands for stripping. Lee Co. has safely poured 20-ft columns this way.

Steel Bands Hold Column Forms



SOME BANDED, some ready, on V. A. job in Columbia, S. C. Here columns diminished 2 in, over-all on each successive floor, making it a simple job to rip column sides, trim wings, and band up forms again. Carpenters for Ray M. Lee Co., Atlanta, claim job is just as easy when forming in place around steel columns.

MAKING UP AND STRIPPING column forms is a cinch if you use steel bands and wooden "wings" to do the job. Forms are made up from tongue-and-grooved 2x6's, and a regular steel column clamp is fastened at each end to insure squareness. Trapezoid-shaped wings are cut at a 45-deg angle from 2x6 material, with larger bases the same length as the column width. These are toe-nailed lightly to the form, center-to-center distance varying with the size and length of the column. Straps are pre-cut to speed banding, and double clips are staggered on all four sides. Steel end clamps are removed and the form is ready. For stripping, a twist of a claw hammer will break the bands neatly. Forms can be erected just as easily in upright position around structural steel columns.

B. C. Nance, superintendent for Ray M. Lee Co. of Atlanta, Ga., originated the idea and is using it successfully on the V. A. Public Service Building in Columbia, S. C. Stretcher and sealer are made by Signode Steel Strapping Co., Chicago, Ill. and one set is sufficient for the entire job.

New Techniques Pace Smart Construction On Harlan County Spillway

AIR - CONDITIONED A GGR E-GATE is a red hot item at Harlan County Dam—but it is only one of many clever innovations the contractors have worked out to keep the \$20,000,000 job rolling.

The dam is a Corps of Engineers project on the Republican River near Alma, Neb. Its 12,000-ft rolled-fill embankment is split roughly in half by a 1,350-ft, 450,-000-cu vd concrete spillway. For the earth dam, the contractors developed a unique side-cutting attachment for a Euclid loader to dig and automatically blend good and bad borrow into a suitable fill (CONSTRUCTION METHODS AND EQUIPMENT, February 1950, page 40). And for the spillway itself, their ingenuity ranged from such large items as an economical earth cofferdam and a pioneering system for air-cooling concrete aggregates. to comparatively minor details like adapting an electric vibrator to clean out cement cars.

At the spillway, a natural dike of impervious clayey silt separated the area from the existing river channel (immediately to the south) but there was heavy groundwater inflow on the other sides. So a ring of Moretrench wellpoints was put down to keep the site dry while a cutoff trench was dug around the three porous sides. The trench was backfilled with impervious material, an impervious 12-ft embankment was superimposed, and the points were pulled to leave, in effect, a circular rolled-fill dam within which the spillway was built. It required no further pumping, other than for

Project Personnel

For contractor, Harlan Construction Co., Alma, Neb. (a joint venture of Guy F. Atkinson Co., Bressi & Bevanda Constructors Inc., David G. Gordon, Chas. L. Harney Inc., W. E. Kier Construction Co., A. Teichert & Son Inc., and Trepte Construction Co.): project manager, Robert W. Atkinson; associate project manager, John Kier; chief engineer, Hugh Parker. Air-conditioning consultant, John R. Hightower.

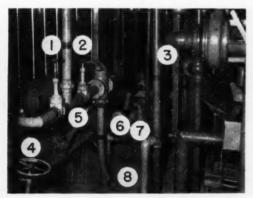
For Corps of Engineers: Kansas City district engineer, Col. Paul D. Berrigan; area engineer, Capt. Gordon A. Schraeder; project engineer, B. V. Reany. removal of direct rain water falling into the cut, as the fill proved to be remarkably tight.

Specifications call for spillway concrete to be between 65 and 50 deg when poured. To keep it within this range, stone aggregate is tempered by air blown through the plant bins: a multiple-unit air conditioning system chills it in summer; farm-type corn dryers heat it in winter. The air-cooled aggregates were substituted for ice in the mix because with only 80 gal of water in a 4-yd typical batch, a great percentage of it would have to be added as ice, and mixing time might have had to be increased to allow it to melt. The refrigeration system, however, does cool mixing water to 33 deg for summer pours.

Other evidences of smart construction include: foundations sawed out by shale cutter; a steel construction trestle so placed that all but half of one line of legs will be salvaged; development of inexpensive canvas absorptive form liners. These, and more, are described and illustrated on the following pages.



VALVE DIRECTORY at contractor's power plant pinpoints all essential operating valves, so comparatively inexperienced men can run plant safely. Actual photographs of various sides of 1,500-cfm Ingersoll-Rand compressor and three big Enterprise dual-fuel en-



gines driving Elliott generators (2,300 kw total) are posted on board, with valves numbered and keyed to operating chart. At right is one of valve photos of Engine No. 3. It shows operators exactly where valves are located; chart tells what they are for.

Soft rock yields to saw excavation

FOUNDATIONS

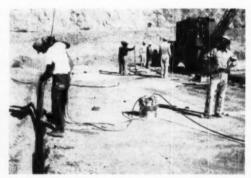
The spillway rests on impervious shaley chalk. Foundation excavation included 300,000 cu yd of this material in a cut whose maximum depth was 50 ft, taken out in 8-ft lifts. By sawing the foundations to exact line and grade with a Joy shale cutter, excavation was speeded, overbreak was eliminated, and concrete was saved. But even earlier, the contractor assured an economical operation by taking advantage of natural ground conditions in cofferdamming the foundation site so maintenance pumping was virtually eliminated-yet at low cofferdam cost.



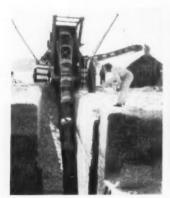
CHALK BASE is excavated for spillway foundation. Procedure is to cut blocks vertically with saw, then drill and blast (0.3 lb powder per cu yd), and muck out with hoe. Here tractor-mounted drill works on nearly completed downstream stepped key.



ELECTRIC SAW cuts 8- to 10-ft slot to isolate blast, stop overbreak. Joy rig pulls self along rails with anchored cable.



ASPHALT SEAL is sprayed in 51/2-in, saw-cut by DeVilbiss unit to prevent deterioration of chalk which is to remain in place.



DITCHER makes unsuccessful attempt to dig out for downstream channel cutoff wall. Backhoe finally did excavating here.



AIR-WATER JET under high pressure cuts top of previously poured concrete block to get solid foundation for next lift.



SERVICE LINES—air, water, phone, power—drop down alternate trestle legs from catwalk above, simplify cleanup and pours.

Stone hauled 340 mi is precious, so handled carefully

AGGREGATES

Almost all coarse aggregate for the spillway concrete is crushed basalt from Golden, Colo., 340 rail-mi away. At the job it is handled by 36-in. Stephens-Adamson belt conveyors-from undertrack feeders to 200-ft incline to 150ft shuttle that rides a 300-ft fivespan suspension trestle over the storage piles. Sand and four sizes of stone (6, 3, 1½, ¾) are reclaimed by a 350-ft tunnel conveyor and sent to the 750-yd plant bins on a 400-ft belt. This was enclosed in corrugated aluminum after high winds started to flap the unloaded belt to pieces.



UNLOADING SPUR leads beneath water spray arms (to flush dust from stone in hopper cars) thence to gantry-hung Robins Shakeout. Stone vibrated from cars falls to undertrack hopper with two belt feeders that move it to inclined conveyor.



SHUTTLE CONVEYOR rides suspension trestle. Towers are timber, cables are $2^{1}/_{2}$ -in. wire from old highline. Dead storage at left is 55,000 tons; live is 22,000.



ELECTRIC VIBRATOR, shoved tight against car by air ram, shakes cement to buried worm conveyor to silo. Note electric capstan. This and similar unit at aggregate track help switch-engine handle 6 cars of cement and 100 of stone unloaded daily.



ROCK LADDER cuts segregation and breakage in drop from 150-ft shuttle to concretelined bunker over 350-ft reclaiming tunnel.

Air conditioning of concrete aggregate proves successful . . .



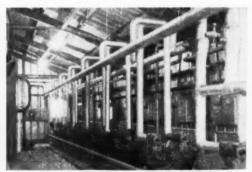
CONCRETE PLANT is air conditioned, with 36-in. Armco supply ducts to aggregate bins and 72-in. return to refrigeration building at base. Johnson 10-setting push-button batcher and two 4-yd Koehring tilters turn out multiplicity of mixes fast.

CONCRETE

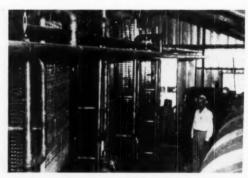
Before batching, stone aggregate is cooled in the concrete plant bins to keep the temperature of the mix below 65 deg as it goes to the forms. Refrigerated air circulates up through the stone and is collected in a common plenum chamber, formed by a roof 18 in. above the bins, for return to the refrigeration plant. Air supply ducts and bin bottoms are insulated with four plies of $\frac{1}{2}$ -in. corrugated Kraft paper backed by bright aluminum foil and covered with Ferrotherm steel insulation.



REFRIGERATION PLANT (shown under construction) houses: (1) Compressors; (2) coils; (3) blowers; (4) water chilling pit. Pit has 1,800 sq ft of Dole plate evaporators to make 33-deg mix water; also makes and stores 30,000 lb of sheet ice as spare.



REFRIGERANT COMPRESSORS (nine General Electric 50-ton Freon-12 units with 50-hp motors) operate in parellel; automatically come on or drop off line to meet varying refrigerating demand.



EVAPORATOR BANK of 24 ten-row direct expansion coils (360 sq ft total face area) sits in insulated room in 32x60-ft Butler building, re-cools spent air returning from concrete plant.



BLOWERS suck warm air through cooling coils, force cold air to aggregate bins. Four 75-hp Sutorbilt fans move 137,000 cfm.



HEATER that warms air for winter pours is one of two Behlen corn dehydrators delivering 1,500,000 Btu per hr to concrete mix.



HOPPER in concrete plant holds mix for filling bucket train. Hardened steel strips have been welded inside to reduce wear.

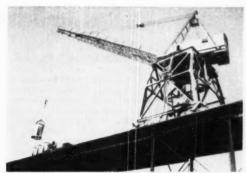
... cooling the mix in summer and heating it in winter



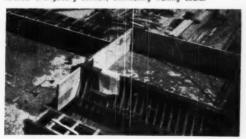
CONCRETE TRAIN takes 4-yd Gar-Bro air-controlled buckets to trestle for handling by 20-ton Colby gantry crane. Operator runs dinky from either end of car's catwalk, where throttle, brake, whistle and reverse-forward controls are located,



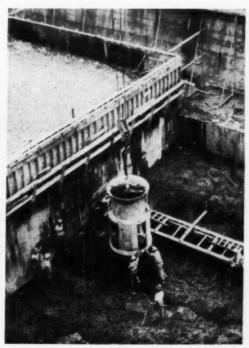
BUCKET CAR is standard flat; with deck armor, bumpers and catwalk added. Timber catwalk posts were later changed to 12-in. pipes filled with sawdust concrete and cabled to other side of car (left photo) for more safety from wild bucket swing.



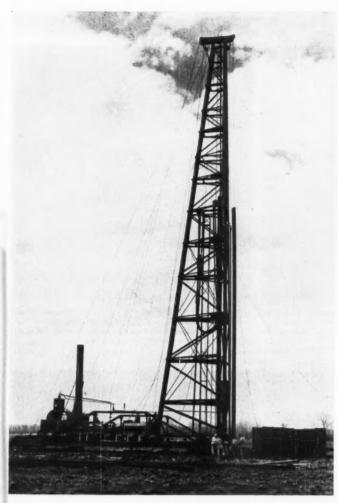
GANTRY CRANE with 110-ft boom rides 1,400-ft trestle. Electric rig was altered to get power from shoe to bare cable in split perforated Orangeburg conduit, eliminating trailing cable.



FORM LINER on all exposed faces is ordinary 10-ox canvas stapled to panel. It proved easier to handle than other absorptive liners. Shrinkage when wet stops face buckling.



CONCRETE POUR, directed by phone to gentry and plant, is by rolling face method—bucket swings, spreads load in 18-in. layer; layers are kept stepped down as pour face advances across block.



BIG PILE RIG towers over Missouri River flats, 75 mi north of Bismarck, N. D., to drive sheetpile cutoff wall for Garrison Dam. Driver is 60 ft long, leads are 110 ft to handle long piles. Well over 50 mi of sheeting is required for 6,655-ft wall.



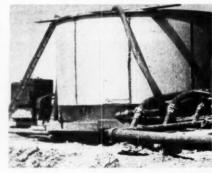
SHEET PILING is welded into 110-ft lengths, with joints reinforced by 2x5-in. plates. Rack holds ten piles vertically so both sides can be welded without extra handling. Piles are shallow-arch 16-in. section with 1/2-in. web, weigh 23 lb per sq ft of wall.



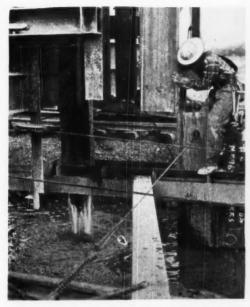
SPADE JET chops hole 100 ft through hard material before pile is set and driven. Walded numerals tell depth of jet point, here 65 ft down.

Rail Rig Drives

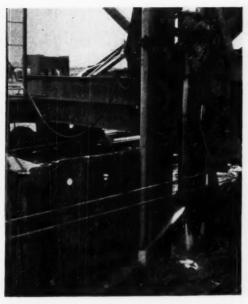
A TOWERING PILE RIG, riding rails on either side of the cutoff, drove most of the 300,000 lin ft of sheet piling that seals Garrison Dam against foundation leakage. Tough subsurface conditions made it necessary to jet before and during driving, but the machine put down as much as 5,400 ft of piles per 20-hr day. And the big rig.



JETTING WATER is pumped from river to settling tank to lessen jet pump weer, thence to piledriver. Battery of four 4-in. pumps



110-FT PILE is threaded for driving after spade jet is pulled. Workman stands on twin beam guides projecting from driver that help align and plumb both pile and jet.



HAIRPIN JET, a 110-ft inverted U of extra-heavy 4-in. pipe, flushes both sides of sheet and is kept 5 ft above pile tip during driving. Jets are off for last 5 ft of penetration.

Miles of Piles for Garrison Dam Cutoff

handled piles up to 110 feet long.

The cutoff at Garrison Dam, a 68,000,000-cu yd rolled-fill project of the Corps of Engineers on the Missouri River in North Dakota, is part trench and part sheet pile. The latter was called for where the previous strata to be sealed off lay deep.

More than 90% of the sheet-pil-

ing footage was on the east bank of the river, and here most of the piles were 110 ft long. Early driving progress with crane-handled hammer was slow, so the contractor turned to a gantry rig with 110-ft tower leads to drive the east-bank sheeting. Accompanying photos show this operation, where the sheeting was driven through

various layers of sand, hard clay and gravel, to fetch up 8 to 10 ft in solid impervious clay till below.

The sheet-pile cutoff wall was included in the Stage I embank-ment contract. Garrison Builders, Inc., was contractor, with Bill Miller and Joe Carter as co-project managers. Col. John S. Seybold was Garrison District Engineer, and has since been succeeded by Col. F. M. Albrecht. Robert H. Hayes and John W. Sibert, Jr. are chiefs of the District's engineering and construction divisions.



feeding single main develops up to 200 psi at jet during toughest driving, but usual operating pressure is 125 to 150 psi.



1083 HAMMER drives sheeting home. Pile rig rides two 90-lb rails at 24-ft gage, each rail spiked to center of standard-gage track. Jacks at each of front two-wheel trucks keep leads plumb. Driver carries 85-hp boiler, 3-drum steam hoist, 2-drum gasoline hoist.

(Continued on next page)

GARRISON DAM . . . Continued





SELECTED IMPERVIOUS BACKFILL is carefully hand tamped (top) along completed section of sheet-pile cutoff wall after muck from jetting operations has been cleaned from trench. Bulldozer with sheepsfoot rollers (bottom) handles trench backfill farther out from wall.



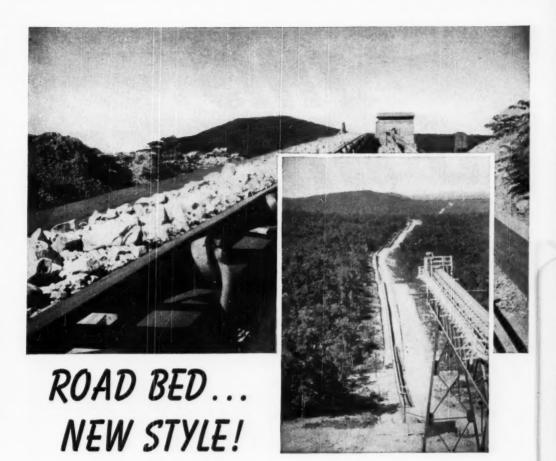
INVERTED NO. 7 HAMMER makes improvised pile extractor when sheet is pulled for inspection. Hairpin jet hangs alongside.

Powered Reeler Cuts Cable Stringing Time

TO PULL CABLES SAFELY near energized conductors, Southern California Edison Co. designed and built a self-powered trailer-mounted reeling machine that quickly paid for itself in time saved. Because of the rig's success, a second is now under construction. A Chrysler engine driving three Tulsa winches powers the cable reels, which can be operated individually or simultaneously. Three hand-turned level-winders keep the cables spooling evenly on the reels. In stringing conductor, wire is pulled from reels on a machinery-less trailer parked at the other end of the line.



Page 56 - CONSTRUCTION Methods and Equipment - June 1950



Here's the latest style in "road beds" to carry construction materials from their source to the job!

This road bed—a Hewitt-Robins Belt Conveyor—will transport those materials far more efficiently, more economically. For, with a Hewitt-Robins Belt Conveyor, no roads need be built (except for maintenance). No tracks need be laid. No expensive trucks need be bought, manned or maintained.

Grades can be mastered. Rivers, roads, and valleys can be bridged.

When tunnels are inevitable, you provide a passage, not a highway!

Sound interesting? Then let's talk facts and figures. Send us the details of any project you have now, or intend to bid on. Include topographical maps. We will show you how conveyorizing may be more efficient, more dependable, more economical . . . a way to get jobs, a way to make more money on the jobs you do get. Write Contractor Service Department, Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

As originators of the modern belt conveyor, Hewitt-Robins makes all types—Hewitt-Robins alone makes all the parts... machinery and belt. And only Hewitt-Robins is able and willing to take complete, unified responsibility for design, installation and successful operation!

HEWITT-ROBINS
BELT CONVEYORS

HEWITT-ROBINS



INCORPORATED

BELT CONVEYORS (balling and machinery)

BELT AND BUCKET ELEVATORS

CAR SHAKEOUTS

DEWATERIZERS

FEEDERS

FOAM RUBBER

PRODUCTS

FOUNDRY SHAKEOUTS

INDUSTRIAL HOSE

MINE CONVEYORS

MOLDED RUBBER GOODS

RUBBERLOKT ROTARY WIRE

BRUSHES

SCREEN CLOTH

SKIP HOISTS

STACKERS

TRANSMISSION BELTING

VIBRATING CONVEYORS, FEEDERS AND SCREENS

THIS 6-WHEELER keeps its Hind Feet on the ground-ALL FOUR!

And it comes as light as 24,000 lbs. GVW

70U ought to ride one of these new GMC middleweight six-wheelers over rough ground - and see how it travels.

Mister you can pull out of almost anything! These



slick, loose going.

babies have DUAL rear drives - and you can have 'em with an optional differential lock-out that assures you of pulling power as long as the two

wheels of either axle have traction. And the differential lock-out, controlled from the cab, means

no loss of power through slippage in mud, sand or

Each dual rear wheel is "free hinged" to roll right over bumps and holes. Even though all four rear wheels are on different levels they'll keep right on pulling. Your load rides smoothly with less chance of shifting than on single-axle vehicles. The load, mounted midway on the "walking beams" that connect the two rear axles, takes only half the upand-down motion of the axles themselves.

Saves Headaches on the Highways too

In hauling heavy equipment or materials to the job these same six-wheelers keep you within legal

Page 58 - CONSTRUCTION Methods and Equipment - June 1950



load limits on the highway - handle with the same ease and speed as conventional units.

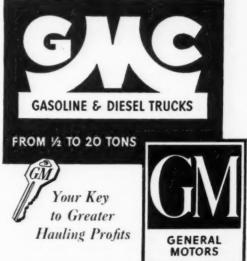
Plenty to keep drivers happy too! Synchro-Mesh transmissions, easy-working cushion-disc clutches, famous "Easy-Turn" recirculating ball-bearing steering gear, power brakes, and roomy lifetime cabs—all make these high-powered hustlers a cinch to handle.

Gross vehicle weights of 24,000 to 32,000 lbs., GMC heavy-duty truck construction throughout, powerful valve-in-head engines, wide range of transmissions — think what you can do with them and their four dual rear wheels.

Why not let your GMC truck dealer show you more about these new additions to the GMC six-wheeler line. Find out why GMC six-wheeler trucks are built to stay on your job and roll away your hauling troubles — and how little they cost.

GMC Truck & Coach Division of General Motors

See him now.





1 PILE-CASTING YARD covers two acres in front of mixing plant, one mile from job site. Cycle of forming, pouring, strip-

ping, curing and removal is carried on between bridge deck pours. Seven sides are formed for octagonal piles and pre-tied units of . . .



2 . . . REINFORCING STEEL hang on end-threaded J-hooks suspended from top of form. These and spacer sticks keep steel centered for full length. Transit mixers pour 1 yd for every 6 ft.



3 STRIPPED PILES are cured with water, running over burlap covers from pinholes in pipe on 16-in. centers. Note three sides in place on adjacent tapered-end form, now ready for reinforcing.

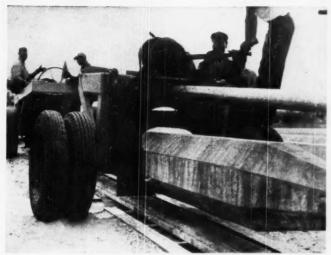
After clever precasting...

Concrete Piles Get Special Delivery

A FINE EXAMPLE of construction ingenuity on the new \$4,000,000 bridge job from New Bern to Bridgeton, N. C., is the pile casting setup next to the mixing plant of the general contractor, Bowers Construction Co. of Raleigh. Planned and operated with the

help of the State Highway Department, they keep the concrete crews busy between deck pours and have been producing the piles faster than the rigs can take them. Collapsible forms, pre-tied reinforcing units, a sprinkler, job-built carrier and monorail transfer sys-

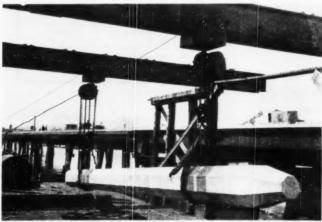
tem make it a smooth, easy job from forming to delivery at the rig. J. B. Cutchin is resident engineer for the N. C. State Highway Department, and F. W. Dickerson is superintendent for the contractor. J. B. Broach is State bridge construction engineer.



JOB-MADE GRAB on Sumter trailer picks up end of pile on wood cushions for 1-mi run to bridge site. Similar unit on front end is connected by adjustable pipe and entire unit towed by truck. Longest piles are 60-footers to support bridge operator's house.



PERFECT PILES, free from honeycombing, are result of air-entrained concrete and careful vibrating. When not in transit, as here, weight is lowered to remove strain on cables. Most piles are 36 ft long, weigh 6.16 tons. Sixty-foot piles weigh 10.3 tons.



PARALLEL MONORAILS pick up piles and transfer them in sets of six to barge at end of dock for trip out to drivers. Note bridge extending out with piles in place, vertical and at a batter of 11/2 to 12, founded on layer of mark.



for low-cost pumping



5-way comparison with any other pump

1: Priming speed 2: Vacuum, capacity and pressure 3: Gallons water moved per gallon of fuel

- 5: Hours of service per dollar invested 4: Self-cleaning ability

Latest type 2' and 3": Compac heavy duty units weathershielded engines.



4" to 10" Portables: Specially housed for easy access to engines, larger fuel tanks.



Aluminum Pumps: with replaceable liners, stainless steel shell fitting. 1½", 60 lbs., up to 5700 gph.—2", 105 lbs., 9000 gph.



Jetting Pumps: 275 lbs. Also 2" to 8" pressure pumps for supply for and mud

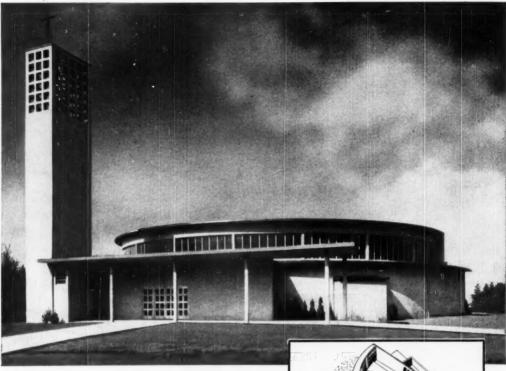


Ask for Complete Pump Catalog

THE JAEGER MACHINE CO.

Columbus 16, Ohio Distributors in 130 Cities of U. S., Canada

AIR COMPRESSORS . MIXERS HOISTS . AGGREGATE SPREADERS BITUMINOUS PAVERS CONCRETE SPREADERS . FINISHERS



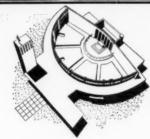
"Plywood Offered Best Solution to Form Problems,"

Says Seattle Architect Paul Thiry

CONCRETE surfaces for this Seattle, Washington, church had to be smoothly curved to carry out the simple dignity of the design. Architect Paul Thiry specified Douglas fir plywood forms.

"The panel material," he says, "offered a simple and most economical solution to the twin problems of smooth concrete and curved structure. Plywood is easy to use. It produces smoother surfaces with a minimum of finishing and is readily bent to the desired radius."

On small jobs and large, Douglas fir plywood has proved its ability to do the unusual and the difficult in form work. Employ its advantages to the fullest!

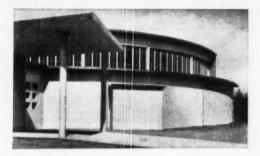


Church of Christ The King, Seattle—a striking departure from traditional treatment. Curved walls were formed with 4'x8' ½' plywood, nailed horizontally to 2''x12'' wales, bandsawed to desired radius. Wales were placed tagether, 24'' to 30''. oc. In no place were they sawn to less than 3 inches, Double wales were backed with 2''x4'' studs, 12'' oc. The Austin Company, Seattle, were the builders.

Douglas Fir Plywood

AMERICA'S

Smooth, Curved Surfaces Easily Achieved with Plywood



Douglas fir plywood forms were easily bent to produce the smooth curve of the outer walls. Canopy over the main entrance and the bell tower were also formed against 5%" plywood. Concrete bands above and below the clerestory windows were formed with ½" plywood, backed by bandsawed 2"x12" wales and 2"x4" studs.



The half-circle shape of the structure affords a fan-shaped seating arrangement which brings the entire congregation close to the altar. Reinforced concrete construction eliminates the need for supporting columns which block vision.



Large, Light, Strong Real Wood Panels

For additional data on Douglas fir plywood for concrete form work, see Sweet's File, Architectural, or write (USA only) Douglas Fir Plywood Association, Tacoma 2, Washington, Of particular interest are two booklets: "Concrete Forms of Douglas Fir Plywood" and "Handling PlyForm."

BUSIEST BUILDING MATERIAL

For Smooth, Fin-Free Concrete Surfaces...

PLYFORM

Concrete Form Panels



Smooth, fin-free syrfaces . . . ease of handling . . . strength, rigidity, tightness . . . superior nail holding qualities . . . cost-cutting re-use factors—these are primary advantages of PlyForm. Highly moisture-resistant glues used in PlyForm panels permit multiple re-use (as many as 10 to 15 are not unusual). For the greatest possible panel re-use, however, specify Exterior-type Concrete Form grade of Douglas fir plywood—bonded with completely waterproof phenolic resin adhesive. For special architectural concrete, requiring the finest possible finish, the architect or contractor may specify Exterior-type or Interior-type Douglas fir plywood in grades having "A" face veneeror one of the new plastic-surfaced panels.



New Keely PtyForm calculator gives construction data for plywood forms, based on hourly rate of your. Camplete with loaflet, "Dasign Assumptions

DOUGLAS FIR PLYWOOD ASSOCIATION TACOMA 2, WASHINGTON [Good in USA only]
Please send me Keely Calculators, I enclose \$1,00 each to cover costs.
Name
Address
City

CAMPBELL'S CORNER A Monthly Equipment Maintenance Feature

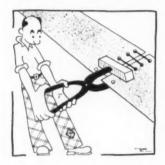
By HOMER C. CAMPBELL, Service Manager, H. W. Moore Equipment Co., Denver, Colo.

Stop Belting Your Belt Around

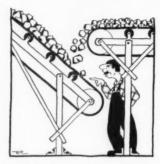
CONVEYOR BELT represents a sizeable investment in many a contractor's material handling setup. And if not properly maintained, it can become a continuing expense. If the few operations necessary to get good service from conveyor belt are made a habit, as all service operations should be, then the job is simple and the belt pays off handsomely. All it takes is common sense.

When installing belt, examine the conveyor systems and plan your installation method before you start. Take it easy. Plenty of high-priced belt has been damaged before it moved a yard of material. It can be injured by bending sharply or folding; severe pressure on these folds and creases aggrevates the trouble.

In splicing a belt, get the splice located in a convenient place. It is



essential that the ends be perfectly square for most economical operation. The cut ends should be sealed with a good rubber cement to keep weather from damaging the exposed portions. Many types of fasteners are available and should be selected for the type of operation you have. Complete instructions for installing fasteners are furnished by the manufacturer and should be followed. Of course, in making the installation of the new belt, the adjusting bolts should be completely released to allow for tightening the belt as it wears and stretches.



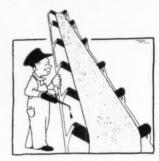
Remember this. The belt does the work for you but you must do the thinking for the belt. The belt travels as you want it to travel. Therefore, the job of alignment is yours. The head and tail pulleys must be properly aligned. Troughing rolls and return rolls play their part. Give them the necessary attention so that they can lead the belt in the right direction. If you have all the components of the conveyor in proper alignment, the belt will give you long service.

Loading the belt is important and should be given the attention necessary for long life. The belt should be loaded as near the center as possible, and to normal capacity as much as can be had. Loading chutes and deflectors can cause a lot of belt damage if not kept in proper adjustment and used as they were intended. Your conveyor system has been, or should have been, designed to operate at a given speed. Over-speeding will cause premature belt failure. Over-loading, slipping and mis-alignment will also cause you loss of timeand that means money.

If belt slippage is encountered, under normal operating conditions, the tension should be checked. Too much or too little tension is bad for your belt. Possibly the drive pulleys are of the wrong diameter. Maybe they just need lagging. In any event, do not operate conveyors with slipping belts unless you are looking for added income tax deductions.

Troughing rolls and return rolls must be free to operate at all times. Do not permit material to accumulate on conveyor structural parts to the extent that it interferes with the free operation of these rolls. They will cause drag on the belt and wear it prematurely. This also causes unnecessary wear on rolls. Oils and greases, if permitted to get on to conveyor belting and remain there, can cause uneconomical operation. You are running the equipment to try to make money; don't throw it away on improper preventive maintenance. Inspect your conveyor equipment regularly and see that it is doing the job for which it is intended, profitably. If you take care of it, it will more than do its share for you.

The care required for the good operation of conveyor belt is small.



Yet many hundreds of feet of belt are ruined regularly due to lack of preventive maintenance. Your distributor can furnish you with a manual on the care and operation of conveyor belting. This manual should be in every preventive maintenance file. If your distributor cannot furnish you with a conveyor operation and maintenance manual, a card to the manufacturer will bring this good information to you pronto.

You have many factors in your operations which you cannot control. You can control the condition of your equipment.

RINTED IN U.S.A

ON-THE-JOB VIEWS AND COST-SAVING IDEAS VOLUME 1-NUMBER 2

OPERATION ASPHALT SETS PAVING RECORD

Baltimore broke all existing street paving records when 14 blocks of arterial streets were paved in one day. Such speed was necessary if costly interruptions and tie-up time were to be held to a minimum. Ten Barber-Greene Finishers placed the required 23,500 sq. yds. of 2 and 3 course hot-mix in 13½ hours . . . to everyone's complete satisfaction. Contractors (7 cooperated), city officials and engineers . . . even the "sidewalk superintendents" . . . agreed that "Operation Asphalt" was a huge success.





413946



Complete Maintenance Plant in Portable Package



PAVING PACE FAST IN VERMONT, TOO

Up here in the northern reaches of the U. S., the Highway Department of Vermont sees to it that this B-G Portable Maintenance Plant really gets around. Ten moves were made in each of the last two seasons. The plant processed as much as 35,000 tons of cold-mix before January snow forced a shutdown. Each of these moves was completed in less than three days, including an average of 75 miles of road travel between setups. This quick, economical portability is a big cost-cutting advantage. It enables the state of Vermont to profitably handle a large amount of its own maintenance work on a year-round basis.

Close-up from Dryer end. Note set-up in yard.

CONVEYOR SYSTEM DOUBLES in DOLOMITE

A unique system for handling two different types of products has been built around this B-G Permanent Conveyor by Consumers Co. of McCook, Illinois. Here you see it carrying limestone from the crusher to discharge from a height of 56' onto a surge pile. Capacity is 600 tons per hour. Tunnel conveyor beneath surge pile carries stone under tracks to dolomite plant. When the second product-limestone for railroad ballast, road and construction workis being processed, a B-G Tripper spills material from the conveyor into a bucket elevator. The limestone is then carried into the main processing plant. Here is another example of how the effective use of simple, standardized B-G Conveyors minimizes the expense and manpower of high capacity moving of bulk materials. Note how small, under-hung conveyor discharges to clear the supports.





SAVINGS MARKED OFF BY THE ACRE The Hanna Coal Company is now saving an estimated 200 to 400 tons of coal per acre at their Number 12 Mine in Georgetown, Ohio. This is coal that was previously left in the mine, buried under the spoil from previous cuts. But now with the help of this B-G machine, the shovel operator is loading out nearly 100%. The B-G Ditcher, in this operation called a "marking machine," cuts a 5" wide trench to the full depth of the seam, marking a "go-no-farther" line for the shovel, and leaving a vertical wall in place of a saw-tooth edge which formerly trapped coal under spoil. This is another example of sound B-G engineering solving unusual problems economically, simply, with minimum manpower.

BAY CITY BEAUTIFIER

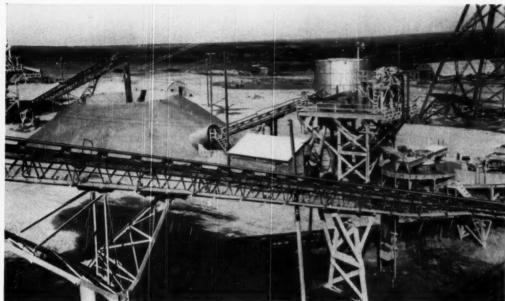
San Francisco has long been noted for its beautiful parks and beaches. Now, to insure that those parks and long stretches of white sand remain the envy of the world, a B-G Crawler-Mounted Bucket Loader performs a multitude of services for the Park Commission. They use it to clear away drifted sand in the dividing strip of seaside, multi-laned highways; stripping loam for use in maintaining or establishing new grass areas; as a loader of debris, sand, etc.; as an excavator for cutting new park paths. The beaches get their beauty treatment at frequent intervals when the B-G Loader patrols the bathing strip, removing glass, stones, paper . . . even an occasional watch or ring



for full, fast information on any equipment

BELT CONVEYORS AND "COMPATIBILITY"

Skillful use of belt conveyors is simplifying the job of handling aggregate for the \$20,000,000 flood control project now being constructed by the Mount Morris Dam builders. Featuring the latest in push-button control, the aggregate plant is geared to produce 5 grades of aggregate from the same stone (for aggregate compatibility) at the rate of 4500 tons per day. This impressive production achievement is made possible largely through the use of 17 belt conveyors that handle all stone and aggregate from raw storage to concrete plant. Typical of the jobs B-G standardized, easy-toinstall, conveyors are doing, is the first stock pile belt, a 36" x 198' unit with a capacity of 500 tons per hour. The many B-G pre-engineered conveyors in this system are contributing greatly to the efficient, economical handling of aggregate for the 900,000 cu. yds. of concrete required.





FOR A TRIM LOAD EVERY TIME

Hydraulically controlled conveyor on this new 8-G Loader swivels to trim every load . . . eliminates spillage or partly filled trucks. This flexibility, plus long reach, allows filling longest, highest trucks, trailers—even railroad cars—to full capacity at a 3 yd. per minute clip. Newest in the B-G line, this Loader travels at 15 M.P.H. on its pneumatic-tired chassis. Easily converted to a 7-11 yd. per minute snow loader to give year-round service. New literature-now on the press-illustrates the many features of this newest B-G Heavy-duty Loader.

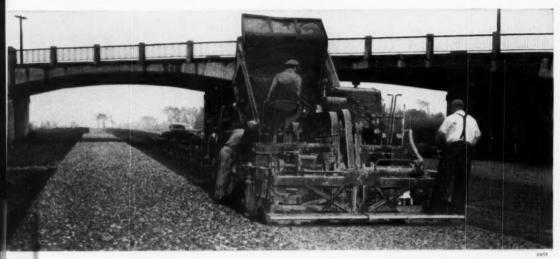
BIG. RUGGED — AND PORTABLE

In quarries or gravel pits, in the yards of State, County, and Municipal Highway Departments, railroads, mines, mills, in any industry—any place where heavy duty portable conveying service is a "must"—this new B-G Portable Conveyor is right at home. In spite of rugged construction for toughest operation, this conveyor is highly portable. It is equipped with a low most truck which speeds movement in and around buildings, guards against damage from underpasses while towing. It is THE heavy-duty portable. Send for your copy of new literature.



on these pages -- see your B-G Distributor





CRUSHED STONE MANTEL FOR THE QUEEN'S WAY



MAKING WAY WHILE THE SUN SHINES

In spite of freakish storms and weather extremes, the C. H. Atkinson Co. was able to make way while weather permitted and pave 7.8 miles of U. S. 36 out of Chillicothe, Mo., last season in near-normal time. Chief contributor to this performance was a B-G Utility Mixing Plant and Dryer that turned out top quality mix at a 60 ton per hour rate. Of particular advantage was the Utility Dryer which solved the moisture control problem and assured mixes of a quality that would have been otherwise unobtainable due to the heavy rainfall. A B-G Finisher placed two 3" courses of type B hot-mixed asphaltic concrete over the 20year-old concrete slab. This was a quick transformation of a rutted, broken roadway with a minimum of interference to normal traffic.

Two B-G Finishers recently completed laying 110,000 tons of stone along the Queen Elizabeth Way between Fort Erie and Niagara Falls, a distance of 18 miles. Often working in tandem, these two green machines spread two courses of raw stone for this penetration macadam in sizes up to 31/2". In spite of this tough abrasive material, both Finishers went through the entire job without an hour's delay . . . completing it in only 1,000 working hours. The final surface is a smooth, durable highway ... the pride of the province. In the words of the engineers "... it cannot be beat."

A 34-YEAR INVESTMENT IN YOUR BUSINESS

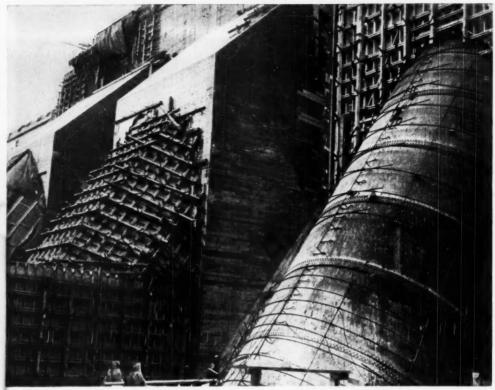
Behind every machine in the broad Barber-Greene line stands a 34-year investment in experience, engineering and material handling techniques. This investment can save you money whenever and wherever your problems involve the handling of bulk materials . . . mixing and placing bituminous surfacing materials . . . as well as ditching and snow removal. Use this investment. Call on your factory-trained, job-experienced Barber-Greene Distributor. Ask him to help you get the most in costcutting operation by eliminating the use of expensive equipment and manpower. Further, your Barber-Greene Distributor has service and repair part facilities you can depend upon through the years. For complete information - bulletins, specifications and prices on any or all Barber-Greene equipment—get in touch with your B-G Distributor or call, write or wire directly to the address below.



Barber-Greene Company

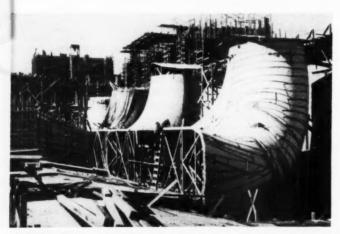
AURORA, ILLINOIS, U. S. A.





Pouring of Headworks Is Part of Threefold Plan as . . .

Des Joachims Dam Builders Rush to Beat

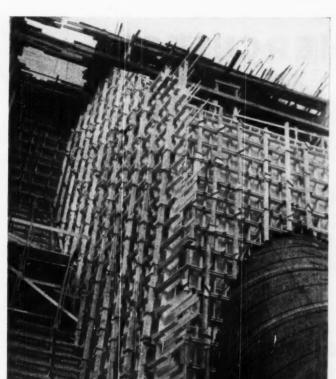


DRAFT TUBE FORMS, prefabricated at carpenter shop, were placed by cableway spanning down stream face of dam, and sit 180 ft below top water level. After land-clearing operations Ontario Hydro processed 12,000,000 fbm of lumber from available timber, purchasing another 18,000,000 for construction of cofferdams, stoplogs, booms, forms, etc.

By WILLIAM M. HOGG

Senior Resident Engineer Hydro-Electric Power Commission of Ontario

THE CLOSING STAGES of the Hydro-Electric Power Commission of Ontario's 358,000 kw Des Joachims project was divided into three areas of operation under the capable direction of A. A. Richardson, project manager: (1) Closure of McConnell Lake control dam (which was reported in the May issue of Construction Methods AND EQUIPMENT), (2) construction of the main dam headworks to a stage where it would handle the water impounded by closure of the control dam, and (3) cutting of 1,500,000 yd of rock in a 7,200-ft tailrace. These three operations were very closely interdependent and closure had to be



Ottawa River's Spring Run-Off

effected in order to take full advantage of the spring run-off of the Ottawa river in filling the 1.2 million acre-ft storage basin.

Of the eight intakes on the main dam, four were formed and poured during the winter months, and the others were left at the intake level. Faced with a rapidly increasing headpond level, headworks pour schedules were rearranged. In the past headworks sections started with the pouring of the headblock, then the pier, and finally the transition section. The new corner-cutting procedure called for leaving out the time-consuming headblock pours in order to concentrate on the main body of the headwork section so that the stoplog and headgate gains could be set. Thus, when the water level reached the intake sills, the logs and gates would be in position.

The headworks, minus head-

blocks, were stable to water level point, 35 ft above the intake sills. With a breathing space provided while the water rose slowly from elev. 450 to 485, the crews turned their attention to the four headblocks which would add extra stability to the entire headworks section.

Pour Schedules

Each headblock was poured in three units:

(1) Anchoring pour of 400 cu yd around the 22-ft penstock, well down on the downstream face of the dam.

(2) 850-yd pour, first of two where penstock liner ran into the transition section, coming up to the center-line of the penstock liner and leaving a series of keys stepped down as the penstock fell away to the slope of the dam.

(3) Top section of 900 cu yd

4

THIS PHOTO and one at left show tremendous simultaneous use of form lumber on first four of eight penstocks in headworks section. Transition section of farthest left has been poured and covered with tarps; next is ready to pour. Third has headlock poured with reinforcing on transition; fourth ready for steel in headblock. To catch spring runoff, order was rearranged on next four by setting stoplog and headgate gains before pouring time-consuming headblocks.

which brought the concrete 6 ft above the top of the penstock liner and transition.

Reinforcing tierods were anchored to the downstream face of the dam and to the steel penstock liner itself through a series of flip angles welded to the steel sides. Formwork was standard for Ontario Hydro; studding on 16-in. centers with 2x6 and 4x6 strongbacks at 30 in. U-bolt use on the headblocks was heavier than usual, however.

Scroll Case Pours

Scroll case blocks were poured in four sections with an aggregate of 2,000 vd each. The scroll case in operating position was quartered, first two pours at the bottom, third and fourth on top. Dowels were inserted in top pours to support and steady generator floor and pedestal. Concrete was delivered mainly on the two 30-in. belts described in last month's article, exceptions being Pumpcrete for the powerhouse proper and closing stages of McConnell Lake Dam and a bucket on the cableway for the roofs of the powerhouse and control area.

Tailrace Drilling Keeps Pace

To obtain full benefit of the Des Joachims Rapids that lay immediately below the main dam and powerhouse it was necessary to excavate a 7,200-ft tailrace, 175-ft wide, through the bed of the rapids, involving the excavating of 1,500,-000 yd of solid rock. The rigid construction schedule called for work to start on the tailrace September 15, 1949, and to be completed by June 1, 1950.

Ontario Hydro took over the job of excavating, with their own forces, a section 2,700 ft long at the powerhouse end, and a 200-ft strip at the outlet. The central 4,300-ft run was let under contract to C. A. Pitts, General Contractors Ltd. of Toronto. Commission

(Continued on page 74)



There are many reasons why it REPEATS

... and they are important to every wire rope user

Results are the most accurate means of measuring true value. And it is because so many users of "HERCULES" (Red-Strand) Wire Rope bave measured it by this yardstick, that it is called on for so many "repeat" performances; that, too, is the reason why it has been so generally accepted, in one industry after another.

What are the reasons for the outstanding service of this particular wire rope? First, it is the product of over half a century of manufacturing experience . . . it is made of acid open hearth steel wire ... it is the correctly balanced combination of strength, toughness and durability...its uniformity is maintained by advanced methods of manufacture, rigid tests and careful inspections.

As "HERCULES" (Red-Strand) Wire Rope is made in both Round Strand and Flattened Strand constructions-either Preformed or Non-Preformed, there is in this one grade, a "right rope" for any heavy duty job, and our Engineering Department will be glad to help you make the correct selection.

We Invite Your Inquiries



For safe, dependable and economical wire rope service, you can depend on the Red-Strand.

Los Angeles 21

A. LESCHEN & SONS ROPE CO. 5909 KENNERLY AVE. - ST. LOUIS 12, MO.

ESTABLISHED 1857

Birmingham 6

Houston 3

it's made of sheet aluminum . . . it's worth many times its weight in gold



This little plate, on the truck mixer that supplies your job, guarantees its capacity to thoroughly mix and agitate as well as to deliver a full rated load.

This means that it has the proper drum design, accurate water control and speed of revolution, and the full specified amount of free mixing space proved necessary to produce quality concrete.

It is one simple, sure protection which the \$250,000,000 ready-mixed concrete industry offers architects, engineers and other users against questionable concrete delivered by nonstandard truck mixers.

Insist upon this rating plate on the truck mixers that supply your job.

The Bureau rating plate is available to any manufacturer, who meets its quality standards and requirements.

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION Pittsburgh, Pa. CHAIN BELT COMPANY Milwaukee, Wis. CONCRETE TRANSPORT MIXER CO.

St. Louis, Mo.

THE JAEGER MACHINE COMPANY
Columbus, Ohio
WORTHINGTON PUMP & MACHINERY CORP.
Dunellen, N. J.
THE T. L. SMITH COMPANY
Milwaukee, Wis.

Truck Mixer Manufacturers Bureau

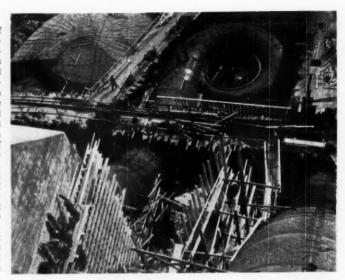
sion forces used a combination of 27 wagon drills and 15 jackhammers of various makes for the removal of their 570,000 vd. Pitts brought three Ingersoll - Rand Quarrymasters into play, supported in a minor way by wagon drills and jackhammers, and made short work of their 830,000-yd section. The Quarrymasters used a 51/2-in. Carset-type bit with tungsten-carbide inserts in each of the four points. Hardly any gage loss was encountered in drilling, and bits were usually sharpened after a day's run right at the rig with the use of a hand-held pneumatic driver powered by the rig itself. Quantities of removal were made to theoretical lines, with allowance increases for overbreak and cleaning berms on shoulders of the cut. Excavation cuts varied from 20 to 40 ft in depth, and the rock turned out highly workable, being seamy, granite-gneiss, highly fractured. Fragmentation was almost always small enough to pass through the 11/2 yd bucket on the Lima shovel, and the Eucs and Athey side-dump wagons made short work of the removal problem. Pitts engineers made the following comparisons: One Quarrymaster equals efficiency of 2 to 4 well drills or 4 to 6 wagon drills, varying according to the type of ground and other physical condi-

Close Drilling

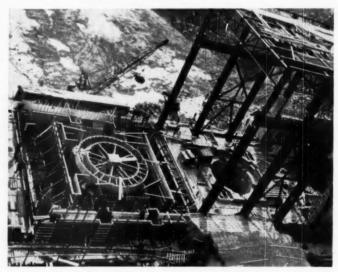
The section of the tailrace under excavation by Pitts passed under a Dominion Government Bridge where the edges of the designed channel were laid down only 20 ft from the supporting piers (cuts in this section were 32 ft). Needless to say, special precautions had to be taken to prevent any damage to the bridge piers and foundations.

Quarrymasters drilled out above and below the bridge, leaving a semicircle of undisturbed rock around each pier extending 100 ft up and down the tailrace. A narrow neck of rock connected the semicircles directly under the bridge, which was too low to allow headroom for the huge machines.

The channel edge was line-drilled with a row of holes on 1-ft centers for the 100-ft length above and below the piers. Assisting holes were driven on 4-ft centers 3 ft inside the line drill, and a third row at 4-ft centers 4 ft back of the second row. With judicious



VIEW FROM TOP of main dam shows canvas over last scroll case during welding, next one complete and under inspection. Case sections were set by indispensable cableway spanning 2,175 ft. Cases were poured in four sections of 500 cu yd each. Of estimated 85,000 yd in substructure of powerhouse, 65% was poured by Pumpcrete.



NEXT TWO ADJACENT scrolls show conditions before and after top pour. As soon as stripping began, cableway again came into play to set steelwork for powerhouse and to transfer form lumber as needed. Later power house roof and control area were poured by bucket on same cableway. River ice began dissolving early in May.

care, powdermen used ¾ lb of forcite per yd, removing the rock with no overbreak and without cracking in the piers or foundations

For handling prefabricated forms, setting powerhouse steel, and pouring certain sections, the conventional type cableway originally chosen for the project was replaced with a new type called the Travelift, which does away with button lines and fall rope carriers. It is operated by a reversible variable-speed hoist, permitting loads to be raised or lowered during



SET OF THREE Quarrymasters made short work of rock in 4,300-ft run of tailrace contracted to C. A. Pitts Ltd. of Toronto. Lima with 1½-yd shovel, Euc end-dumps, and Athey side-dumps made short

work of rock haul. Total contractor yardage was 830,000 yd including delicate job where channel edges ran within 20 ft of piers on old inter-provincial bridge.



THREE HYDRAULIC JACKS, controlled from operator's cab, level Quarrymaster once it is spotted and support unit during operation, insuring hole alignment. All drilling is dry and air through drill blows particles into collar where suction carries it to collectors.



NEW TYPE OF CABLEWAY, called Travelift is brainchild of two Canadian inventors who work for Pitts. Carriage line is endless, eliminating need for button lines and fall rope carriers. Loads can be raised or lowered at various speeds during traverse.

travel in either direction. Through a system of successive suspension points, loads are transferred uniformly on all wheels of the carriage. The carriage wheels engage the cable on more than 1/3 of their circumference and consequently can track at high speeds without

chatter. Tautness is provided in the endless power cable by means of constant-tension counterweights in the tail tower.

Two Canadian inventors, N. S. Bateman and Maurice Missiaen, employees of the Pitts Company, combined their talents to produce the Travelift. The rig is handled by Construction Improvements Ltd. with an office in Columbus, Ohio, to handle U.S. sales. Last photo shows smaller model in use at McConnell Lake control dam; larger type spanned main dam from Quebec to Ontario shores.

Why is so much of today's most profitable earth-moving equipment built of U·S·S High Strength Steels?

The reason is simple—and it is not because these steels were the very first high strength steels made available to industry. They are so widely used in equipment famous for its performance because big-name builders have found that with these service-tested steels they can obtain practically any combination of desirable properties. For example—

With U·S·S High Strength Steels, greater strength can be built into members with no increase in weight, because these steels have a yield point 50% higher than plain structural steel.

With U·S·S High Strength Steels, the toughness and durability of stress-carrying members can be greatly increased because these steels have higher endurance limit, greater resistance to shock and impact, freater resistance to abrasion.

When resistance to atmospheric corrosion is needed, these steels can be used to provide it—up to 4 to 6 times that of plain structural steel.

In addition, U.S.S HIGH STRENGTH STEELS have good formability. They are readily weldable. And they are low in cost. If you want to step up the efficiency of your equipment—make it stronger, more rugged—able to do more, and cheaper to operate, get in touch with our metallurgical engineers. They have had 15 years' experience applying U·S·S High Strength Steels to digging, loading and hauling equipment of all kinds. They'll be glad to show you how these steels can be most economically applied to your designs to give you the results you're after.



AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH

COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM

UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK



U·S·S HIGH STRENGTH STEELS

U-S-S COR-TEN - U-S-S MAN-TEN - U-S-S TRI-TEN

0-931

UNITED STATES STEEL



ADD THESE NEW FEATURES TO PROVED "TL" RUBBER-TIRE PERFORMANCE

New 15 ton lifting capacity.
 New, longer, heavy-duty TL-25 turntable.
 New pin-connected crane boom — more.

New pin-connected crane boom — more capacity and more reach.
 New, longer specially designed shovel-

New, longer appearance

crane carrier.

S. Bigger tires for better soft-ground flotation.

Front wheel drive available on Standard

Track Carrier.

Track Carrier.

Track Carrier.

7. Wide Track models available for maximum. "on rubber" lifting capacities.

8. Full convertibility to crane, shovel, dragline, hoe, clamshell booms with equal efficiency.

Get the facts on the Biggest and Best in rubber by calling your Thew-Lorain distributor. ber by calling your Thew-Lorain distributor.

THE THEW SHOVEL CO. LORAIN, OHIO

new, heavy-duty 3/4 yd. Lorain TL-25 turntable is now available mounted on a series of new, longer and heavier 6 wheel carriers ... The resulting machines will lift 15 tons — 50% more than previous "TL" models . . . These machines are offered you in 2-engine Moto-Cranes and single-engine Self-Propelled machines in the following models. Self-Propelled

machina	Moto-Cranes	Self-Proper
Model	The state of the s	Model
	Model MC-254	SP-254
Standard Track Carriers	1	Model
Wide Track Carriers that greatly increase lift-	Model MC-254W	SP-254W
that greatly increased ing capacity "on rubber"		1

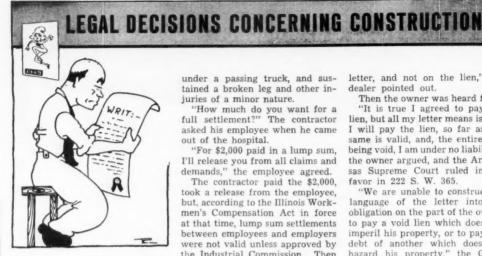




ORAIN

SHOVELS · CRANES · CLAMSHELLS · DRAGLINES HOES · MOTO-CRANES

SEE YOUR THEW-LORAIN DISTRIBUTOR FOR ALL THE FACTS



The Generous Uncle

"I HAVE AGREED to furnish my nephew, Jim Jones, with funds to pay his personal liabilities, so am enclosing herewith my check for \$2,750.85 to cover your building account," John Jones wrote.

"That's a brand plucked from the fire," the contractor assured himself, mailed a receipt for the account, sent the check to the bank on which it was drawn, and in due time it came back marked "payment stopped."

"Jim's debts were bigger than I figured on or than he told me, so I'm calling the whole deal off," John Jones explained.

"I'll sue you, for I don't have to look to Jim now, with your signature on a valid check," the contractor threatened.

You can't collect, for there was no consideration or benefit from you to me," John Jones retorted.

But the contractor sued, and the Georgia Court of Appeals in Brook v Kay & Townsend found in 129 S. E. 913 ruled in his favor.

"The jury was amply authorized to find that it was the intention of the parties that the original debtor, Jim Jones, should be released and discharged, and the release of Jim Jones was a sufficient consideration for the check," said the Court.

The Illinois Injury

AN ILLINOIS WORKMAN, in the employ of the contractor, fell from the twentieth story of an Illinois building, bounced off the sidewalk under a passing truck, and sustained a broken leg and other injuries of a minor nature.

"How much do you want for a full settlement?" The contractor asked his employee when he came out of the hospital.

"For \$2,000 paid in a lump sum, I'll release you from all claims and demands," the employee agreed.

The contractor paid the \$2,000, took a release from the employee, but, according to the Illinois Workmen's Compensation Act in force at that time, lump sum settlements between employees and employers were not valid unless approved by the Industrial Commission. Then the employee applied to the Commission and got an award of \$3,000.

"Of course, I'll be given credit for the \$2,000 that I've already paid," the contractor suggested.

"According to law, the lump sum settlement without the approval of the Commission was illegal and the courts will not allow you the benefit of an illegal contract," the employee's lawyer contended, and the Illinois Supreme Court upheld this contention in the case reported in 127 N E. 703.

"No lump sum settlement is authorized to be made in any other way, except under the jurisdiction of the Commission, and any contract that makes such a settlement otherwise is an illegal contract," said the Court.

The Arkansas Lien

THE CONTRACTOR had erected a building for an Arkansas owner. bought material from an Arkansas dealer, and the dealer filed a lien against the building.

"Please do not file suit on your lien, but give me more time, and I will pay," the owner wrote to the dealer. The dealer agreed to give and did give the additional time requested, the owner failed to pay. and the dealer filed suit.

"The lien is void, as it was not filed within the statutory period," the contractor claimed, when the case came to trial.

"We'll admit that, for the sake of argument, but I am entitled to judgment against the owner on his letter agreeing to pay the lien. In other words, so far as the owner is concerned, I am relying on the letter, and not on the lien," the dealer pointed out.

Then the owner was heard from. "It is true I agreed to pay the lien, but all my letter means is that I will pay the lien, so far as the same is valid, and, the entire lien being void, I am under no liability,' the owner argued, and the Arkansas Supreme Court ruled in his favor in 222 S. W. 365.

"We are unable to construe the language of the letter into an obligation on the part of the owner to pay a void lien which does not imperil his property, or to pay the debt of another which does not hazard his property," the Court

The Contractor's Untimely **Temporary Death**

THE CONTRACTOR agreed to erect a building for \$15,000, and the contract provided that it was to be binding upon "the said parties, their heirs, successors, executors, administrators, and assigns."

Then the contractor died before the building was completed, and the owner attempted to hold the executors.

"The contract is a personal one involving personal skill which does not survive the death of the contractor," the executors maintained. "The work can be done as well by any other contractor, so that rule does not apply," the owner demurred, and the Washington Supreme Court ruled in his favor in MacDonald v O'Shea reported in

"If the contract was not broken by the contractor in his lifetime. the executors must not break it, but will be held for its performance, unless this presumption is overcome by the nature of the contract: as where the thing to be done required the personal skill of the testator himself." was the reasoning of the Washington Supreme Court. "Where a party agrees to do that which does not necessarily require him to perform in person, that which he may, by assignment of his contract or otherwise, employ others to do so, we may fairly infer, unless otherwise expressed, that a mere personal relation was not contemplated."

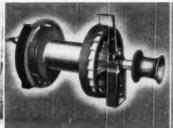


A yard a minute!

Here's how Nettleton-Baldwin-Anderson Inc. did a big job fast at Seattle. In building the Nettleton Apartments, they used this 160-foot tower, and a Model 75, 2 Drum American General Purpose Hoist. Day after day, the concrete bucket made one full round trip a minute, while the second drum was hoisting steel and lumber. Pouring at speeds up to 62 yards per hour, the hoist raised 13,500 yards of concrete for the job. Top speed, ease of operation, and lowest cost load lifting have made American General Purpose Hoists the fastest-selling line of construction hoists. Models from 2500 to 10,000 lbs. single line pull-5 to 100 horsepower. Gasoline, diesel or electric power. Send for new hoist catalog today.



HE'S RELAXED! Even making 160 ft. lifts at top speed, operator finds American Hoist takes minimum effort. Comfortable seat, grouped controls help avoid fatigue.



BALANCED DRUMS. Note that clutch and brake are at opposite ends of shafts. Bearing load is equalized; entire hoist runs cooler; upkeep problems vanish!



COMPRESSION TYPE DOG is an outstanding feature to experienced, safety-conscious operators. It's never under tension; can't bend, or slip out of ratchet.

American Hoist

& DERRICK COMPANY

St. Paul 1, Minnesota

Plant No. 2: SO. KEARNY, N.J.
Sales Offices: NEW YORK • PITTSBURGH • CHICAGO

MAIL THIS COUPON FOR CATALOG

American Hoist & Derrick Company
2 St. Paul I, Minnesota

500

Please send catalog on American General Purpose

 Please send catalog on American General Purpose Hoists: ☐ 5 to 40 horsepower ☐ 50 to 100 horsepower

Name

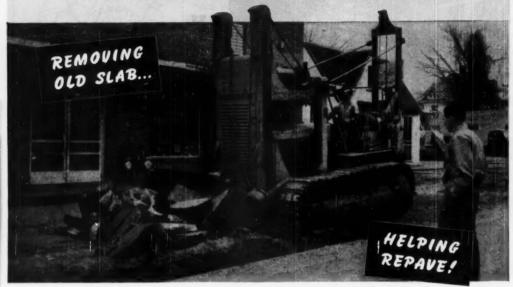
Company

Address

City

State

T6 TRAXCAVATOR is 'One Man Band'!



This T6 TRAXCAVATOR'S tractor teammate carries a skull-cracker that breaks old slab. Next the T6 strips and truck-loads the broken concrete. No other piece of equipment can match the effectiveness of a TRAXCAVATOR on old pavement stripping - either concrete or blacktop.

A big TRAXCAVATOR is always profitably busy. It prepares subgrade - excavates for new culverts - back-fills sewer trenches - sprints all over the job dressing shoulders, shaping driveways, helping landscape and clean up. TRAX-CAVATORS also help produce, stockpile and load aggregates - and charge hoppers.

Big TRAXCAVATORS, the T6 or T7, can thriftily handle the functions of a fleet of large, limitedduty machines. Lively, tractor-powered "crowd" on the TRAXCAVATOR'S bucket, enables digging and excavating tough clay or frost; loading shot-rock!

The T6 and T7 are unit engineered to match "Caterpillar" D6 and D7 tractors in capacity, low upkeep and long life. The 5 TRAXCAVATOR Models (1/2 to 4 cubic yards capacity) provide the only complete tractor-excavator line - give you a size choice for every job and purpose.

Ask your TRACKSON-"Caterpillar" Dealer to recommend the unit that fits your needs, or write direct to TRACKSON COMPANY, Dept. CM-60. Milwaukee 1. Wisconsin.

TRAXCAVATOR Tractor Excavator

The Original



REDESIGNED for Faster Work on Tough Jobs

Yes, the improved Black & Decker 2" Electric Hammer is a better buy than ever for any tough drilling or cutting job requiring a hammer action! It has been redesigned to improve action of the idling mechanism, reduce bearing seat wear and lengthen armature life. Its nosepiece has been changed to take new, larger diameter Hammer Tools, developed to make full use of its power, speed and efficiency. Yet, it's still \$195.00!

Some of the Electric Hammer's many uses

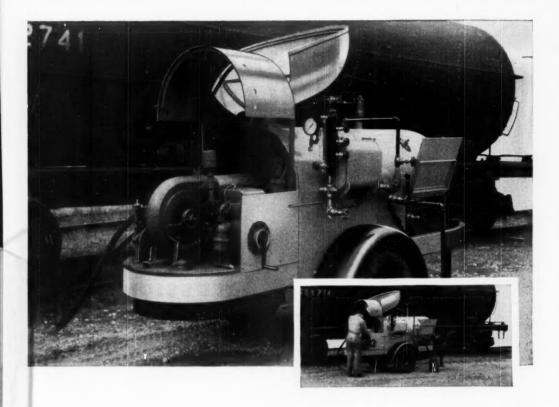
drilling or channeling in brick, stone or

concrete—chipping metal—driving spikes—scuffing concrete surfaces—handling demolition. Amazingly husky, completely self-contained, requires no transformer or extra equipment. Operates from A.C. or D.C. outlet or portable generator. Cuts up to 2" hole in concrete. Other models for ½", ¾", 1½" capacities. See your nearby B&D Distributor for demonstration. Write for free catalog of over 100 Portable Electric Tools to: The BLACK & DECKER MFG. Co., 659 Pennsylvania Ave., Towson 4, Maryland.

Black& Decker

PORTABLE ELECTRIC TOOLS





FAST STEAMING - FOR FAST TANK-CAR HEATING

Trailer or Truck Mounted for Quick Job-to-Job Transport



An all-purpose unit provides steam wherever and whenever needed — for heating, thawing, cleaning.



Working Mate to the Tank-Car Heater - The Pumping Booster



Heat only what you need — not necessary to heat contents of tank car — with a Cleaver-Brooks Pumping Booster. No steam or water required for operation with this oil-fired, high efficiency unit. Available in 2 sizes, skid of trailer mounted.

... Use Less Fuel—Water—Work With a CLEAVER-BROOKS Mobile Tank-Car Heater

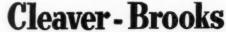
Designed for fast steaming, the Cleaver-Brooks gives you 125 lbs. steam pressure in 20 minutes—the only tank-car heater with the fuel-saving fourpass flue travel construction. No water problem—full condensate recovery and return to heater under pressure.

Built for full capacity—full time work—available in three sizes, skid or trailer mounted 1 car heater (17 bhp)—2 car heater (28 bhp), 3 car heater (42 bhp). Write for the Cleaver-Brooks Tank-Car Heater Catalog.

CLEAVER-BROOKS COMPANY
387 E. Keefe Avenue, Milwaukee 12, Wisconsin



Write on your business letterhead for the Bituminous - Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs, and tons based on area and depth of area to be covered.



BUILDERS OF EQUIPMENT FOR THE GENERATION
AND UTILIZATION OF HEAT



Reorganization Plan Defeated

MANY EYES in the construction industry were turned to Washington last month when the President's Reorganization Plan No. 12 was defeated. The plan would have abolished the office of general counsel of the NLRB and would have transferred all functions to the chairman of the board.

As expressed by J. D. Marshall, assistant managing director of the AGC, the peculiar relations of dismissal and employment methods which prevail in the construction industry made it important both to unions and employers to have a source of interpretation of the T-H Act as it applies to their industry. Since the Wagner Act had never been applied as a matter of policy in the construction industry, no precedents had been established, and it was understood that the Board would decide policy and interpret the law case by case. It was important, then, that the office of the general counsel should function independently of the quasi-judicial NLRB in bringing action and prosecuting violations of the act before the Board.

There have been mistakes and disagreements, naturally, in the legislative and administrative history of the national labor act, but concerted effort on both sides can eliminate the bickering and give the labor law a fair chance.

To Picket or Not to Picket?

The Supreme Court of Texas upheld a trial court's injunction directed against picketing to compel an employer to grant a union shop, but at the same time ordered a modification of the injunction to permit picketing for "lawful objections." A job calling for the relocation of hangars was picketed by the Construction and General Labor Union No. 688 because the workers refused to join the union and the employer refused to replace them with union members. The employer requested an injunction against the picketing as a violation of a state law prohibiting such action by a union representing less than a majority of the employees. A trial court granted the injunction which prohibited picketing except where a controversy existed between an employer and the majority of his employees or a representative union, and the issue would have to involve wages, hours, or employment conditions. Furthermore, the court of appeals upheld the injunction.

When further appealed to the state supreme court, it ruled as unconstitutional the statute which limited picketing in a labor dispute to controversies between an employer and his employees, and based the de-

cision on a former U. S. Supreme Court ruling (AFL vs Swing, 312 US 321). They claimed an interdependence of interests existed since, for example, in this case union iron workers could have performed the moving job. They also pointed out that the union was trying to force the employer to violate a state law which prohibits discrimination in employment against non-union members. Picketing for an unlawful object is enjoinable, the court declared, even though other objects of the picketing, such as higher wages, are lawful.

Atom Bomb Not "Commerce"

Employees engaged in construction and alteration of buildings at Oak Ridge, Ten, L. for production of component parts of the atom bomb, brought suit recently to recover overtime pay under the FLSA, claiming that they were engaged in interstate commerce (Selby vs Jones Construction Co., 6th USCA May 2, 1949). The U. S. Court of Appeals for the sixth circuit, however, ruled otherwise.

Although materials to be processed by the contractors operating the plant were taken in from points out of state and finished goods were sent out again, the materials were at all times the property of the U. S. "Commerce" does not include production or transportation of a weapon of war in secrecy, the court stated, and further added that (1) no buying or selling was involved, (2) the building contractor was not an independent contractor in this case, and (3) construction projects come directly under Army direction and supervision.

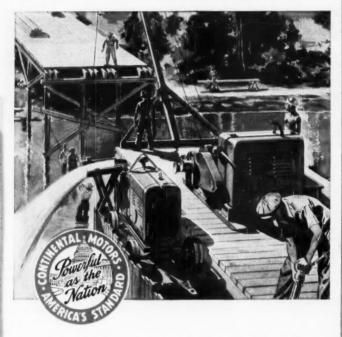
Employment Assistance Act of 1950

... is one piece of legislation now in the works in Washington which will bear watching. (H.R. 7444 Douglas, Calif. 2/27/50). The act would have the President, on the advice of the Secretary of Labor, certify areas or industries where unemployment threatens to reach serious proportions. Attempts would then be made to assist those areas with RFC aid and government contracts to private business.

A \$2.2 billion Unemployment Emergency Reserve would be created to stimulate immediate public works and public service projects through grants-inaid to states and local public agencies (1) for Federal resources development, public works and public service projects, and (2) to increase manufacture and purchases for stockpiling, defense, etc.

The bill also proposes a long-range program for additional resources development and public works.

GOOD EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER



In the construction industry, as elsewhere, there's growing recognition that good equipment is better with Continental Red Seal power. One of many reasons WHY it's better is Continental Motors' policy of engineering the power plant expressly for its work. There are Red Seal industrial models from ¾ to 140 horsepower, built to hundreds of different specifications, in a variety of shapes and profiles, with performance characteristics suited to a wide range of jobs. It will pay you, when buying industrial or construction equipment, to choose a make with Red Seal power.

IN PARTNERSHIP WITH AMERICA'S LEADING
BUILDERS OF POWERED EQUIPMENT

Continental Motors Corporation

MUSKEGON, MICHIGAN

Ice Cures Culvert Headache



WITH ALL BUT supporting earth pillars dug out to proper grade under culvert and headwall, workmen inserted 100-lb . . .



... CAKES OF ICE, removed earth supports and watched 100-ft section of 24-in, culvert settle slowly to within 1 in, of desired grade.

WHILE WORKING ON the approaches to the Nueces Bay causeway near Corpus Christi, Tex., engineers of Brown and Root, Inc., Houston had the bothersome problem of lowering a 100-ft. stretch of 24-in. concrete culvert and a heavy headwall. Superintendent Tommy Thompson had the mucky ground dug out to proper grade underneath the pipe, except for occasional supporting pillars of earth. Blocks of ice were wedged under the pipe, the earth piers removed, and the Texas sun completed the job.

Zsigns of valuable "finds"

What's sweeter music to a "sourdough's" ears than the bray of his burro? Why, it's the clicking of his Geiger Counter telling him uranium's at hand... and the louder it clicks the better the lode.

That's why prospectors today carry and count on the Geiger—to tell them when they've made a VALUABLE "FIND."

You don't need a Geiger Counter to hit the mother-lode in wire rope value. Just look for the HAZARD REEL. It's the sign of a wire rope that users everywhere recognize and rely on for uniformity, longer service, easier handling and utmost dependability. It's the sign of more for your wire rope dollar... the sign of a VALUABLE "FIND."



ACCO In Business for Your Safety

AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

for \$6,150,000,000 in CONSTRUCTION

Don't you want to bid on it?

Government purchasing agencies collectively, are the nation's largest principals for construction contracts and building materials. Among their requirements appears every type of contract.

Included, for example, are road building, dredging, airfield construction, hospitals, private homes, test facilities, removal and wrecking, interior constructions, roofing, ventilating and air conditioning, water control, bridges.

The Government is eager to do business with small and medium-sized concerns. No salesmen, "influence," or "Washington representation" are necessary. New bidders are being added constantly on the sole basis of honest service at a fair price.

The way to this business can be made easy for you. We issue a Daily Construction Bulletin covering all Government requirements. Included are the dates for filing bids, where to obtain specifications. Moreover, our Advisory Service provides information on what procedure to follow, what prices and discounts are current.

You are armed with facts before you start. Here is a market you cannot overhook. And we cover every Federal Agency throughout the country. Government terms are cash—usually 10 to 20 days. Government contracts are bankable assets.

TRILANE ASSOCIATES, INC.

Fill out and return this coupon NOW

-to reach the greatest

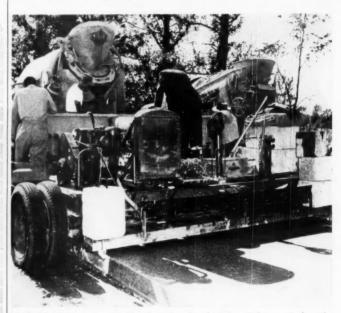
construction customers in the world.

1 Hudson Street, N	lew York 13, N. Y.
Here is our subscription struction Bulletin who lists the construction ment Purchasing Ages	ich, we understand, needs of all Govern-
stand that this entitle	s us to your Advisory
Service. Enclosed plea	
\$72.00 to cover both fe here) for six months	
Firm Name	
Ву	
Street Address	
City	State

Trilane Associates, Inc. Dept. CM-6



CONTINUOUS PAYER lays a concrete slab without forms. Lateral alignment is maintained by rod projecting in front of paver to assist operator in following guide line. Steering mechanism permits handling the paver around curves.



FORMING UNIT rests on and rides along the subgrade. It is entirely separate from the traveling unit which serves merely to drag it forward. Connection is through a link chain. Sliding unit serves as form for vertical edge of the concrete slab.

Paver Extrudes Concrete Slab

By MELVIN DEAN, Assistant Editor

CONCRETE ROADS BUILT WITHOUT FORMS are not an idle dream. At least not when using a new continuous paving machine which combines the operations of a spreader, transverse finishing machine, and longitudinal float. Designed for construction of low-cost secondary and tertiary roads, the machine threads out a continuous ribbon of concrete without forms or other special equipment or materials.

Standard or air-entrained concrete mixes are used and may have slumps as high as 3 in. No explanation is offered as to why the slab once formed holds its shape, other than, "it just does." Experimental strips built so far certainly seem to uphold this statement. No allowance is made for handling reinforcing steel, nor for construction of expansion or contraction joints.

The forming unit consists of: Hopper for receiving concrete; vi-



VIBRATORS in the hopper compact the concrete by internal vibration as it flows from hopper to the forming unit.



CONCRETE FLOWS from mixer to hopper and thence to slip form as paver travels forward at speeds up to 10 fpm.



RECIPROCATING BELT (arrow) moves transversely to direction of travel, and provides slab with a smooth top surface.

brators; side slip-forms which ride on subgrade; sliding form for top of slab; and reciprocating belt that forms a smooth riding surface.

Still in the development stage, here's how the paver stacks up now: It is not a cure-all for paving contractors, but is a highly specialized unit for specific types of work. Original development was by James W. Johnson and other engineers of the Iowa Highway Commission. Advance designs are under way by the Blaw-Knox Co. Commercial models should be available early in 1951.



FOR PROFITS ... ECONOMY... SPEED use **Ramset System**

When fastening into steel . . . concrete . . . masonry

Push costs down and profits up by using fast, sure RAMSET SYSTEM for most fastening jobs in steel or concrete. Sturdy, dependable RAMSET TOOL instantly sets any one of 65 drive pins or threaded studs. No muss, no fuss, no trouble.

Cost-saving and time-saving advantages of RAMSET are being proved every day by thousands of users . . . with time and costs cut as much as 70% over old-fashioned methods.

Ask for a 15 minute demonstration and proof of RAMSET'S ability to outwork less efficient driving tools. Call your local RAMSET Specialist or ask us for details.

STEMCO CORPORATION

12117 Berea Road • Cleveland 11, Ohio PIONEER IN POWDER-ACTUATED FASTENING



Wanilla or

You get the best of both with

There is a size and type of Cedarapids aggregate producing plant for every job. Send for catalogs.

> Bulletin MT — Master Tandem Bulletin Unit-2 — Unitized Plant Bulletin JT-3 — Junior Tandem Bulletin PS-1 — Pitmaster Bulletin Rock-1 — Rock-lt Bulletin SPP-1 — Single Pass Bulletin Mawk-1 — Hawkeye



WHETHER you use your aggregate as just plain vanilla aggregate or chocolate covered for black top, you'll be way ahead if you produce it with Cedarapids equipment.

The Junior Tandem, illustrated, is the leader of the long line of Cedarapids portable crushing and screening plants known everywhere for big volume production, low operating costs and minimum maintenance. Smooth, balanced coordination of screens, crushers and conveyors... quick adaptation to a wide variety of jobs... fast, easy set-up and take-down—all add up to more profitable operation—50 tons an hour, 250 or more—crushed gravel, aglime or roadstone—whatever the specifications or volume—your Cedarapids distributor has the plant to fit your needs. See him today.

THE IOWA LINE of Material Handling Equipment Includes:

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS
• UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE AND
GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG
SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS.



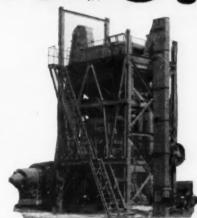
Chocolate?

Cedarapids Equipment

A CEDARAPIDS bituminous mixing plant is just the thing to chocolate mix your aggregate for low cost black top.

The mix from the Model FA, shown above, will meet the strictest specifications as well as your own demands for low cost. The FA is our most portable batch type plant but its 25 cu. ft. pugmill assures plenty of capacity for handling most of your jobs.

On all Cedarapids plants, perfectly matched screens, batchers, pugmills, elevators and driers provide a smooth, steady flow of thoroughly mixed batches. If your specifications are not too strict a Cedarapids Volumetric type plant may be the answer—either a Patchmaster or the Master Mixer. Write for bulletin today.



MODEL E—Here's the plant for your big black top jobs. Available in 2,000, 3,000, and 4,000 lb. batch sizes. They combine big volume with accurate batching, thorough mixing—low cost and easy portability. Also 1,000 lb. Model A stack-up plant. Ask for Bulletin AP-12.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

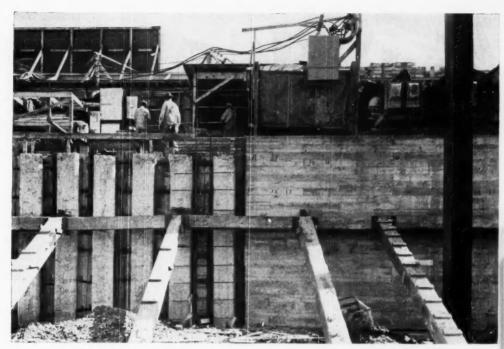
Need Standard Bolts ? for Construction?



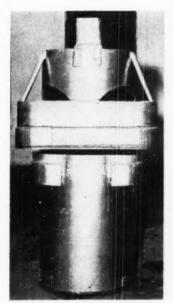
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation

Other Bethlehem Construction Fastenings TIE-RODS . SPIKES . TIMBER BOLTS RIVETS AND RIVET-BOLTS . NUTS . TURNBUCKLES . CLEVISES . SPECIAL BOLTS



Concrete piles hold bank (left), are later built into wall (right), so . . .



SPECIAL TOOL that digs out for piles has cutting ears that enlarge one side of 18-in. drilled hole to 26 in. Ears chop dirt; direct it into cylindrical bucket below.

Temporary Bank Support Becomes Permanent Foundation

CONTRACTORS for the Sakowitz Bros. building in Houston, Tex., have developed an economical foundation construction technique that eliminates the temporary steel sheetpiling, that has been common on other similar jobs. First, they pour uncased concrete piles in reamed holes along the building line, then excavate the basement while the piles hold the sides of the cut. Later, the piles are incorporated into the basement wall pour and become part of the permanent structure.

Here's how the system works: Somewhat semicircular holes (drilled by a special tool) are dug on 3½- to 4-ft centers along the building line to a depth of 25 ft. Holes are 18x26 in. and have their flat side facing the basement area. Into these holes, fabricated cages of reinforcing steel are lowered and the holes filled with concrete to make a line of piles.

The basement is then excavated. As the cut is carried down, material (clay) is removed from between the piles with air spades, and 2x8-in. vertical sheeting is placed to hold the bank. Sheeting planks are held in position by steel angles cut to span between piles.

One horizontal 12x12-in. timber wale 6 ft down, shored by 12x12's to deadmen at excavation bottom, braces the wall. The wale is held by short lengths of I-beams welded to angle irons fastened to the piles by 1x14-in. bolts placed with the pile reinforcing. (The bolts projected 1 in. into the undisturbed clay when the piles were poured.) The I-beams hold the wale about 10 in. from the face of the piles so





Sturdy, box section side members . . . Cast steel hinges . . . Single, square structural steel dipper sitck . . . Cast steel saddle block with adjustable and replaceable wear plater . . Direct UNIT chain-crowd mechanism — eliminates cables, racks, and pinions . . . Special equalizer insures even pull on both strands of the double crowd-chain.



Twin hook-rollers equalized and mounted on front and rear of rotating frame. Quickly adjusted by means of eccentric pin. 4 upper-load rollers and 4 hook-rollers—all conical shaped and made of drop-forged steel.

The completely new UNIT 614 — ½ yard offers the same rugged construction usually found only in machines of greater capacity. Twenty-five years of engineering skill and craftsmanship have gone into the production of this model — an outstanding product resulting from specializing in sizes under one yard. Compare its construction features and design with any ½ yard machine in the market today. We are confident that your judgment will favor the UNIT 614.

Get the facts - Write today for literature.

UNIT CRANE & SHOVEL CORP.
6305 W. Burnham Street • Milwaukee 14, Wisconsin, U. S. A.



SHOVELS - DRAGLINES - CLAMSHELLS CRANES - TRENCHOES - MAGNETS



KNOW HOW ENGINEERING SUPERVISION EQUIPMENT to keep jobs

DRY

economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION

2 Broadway 2123 5, 56th 5t. 8221 Atlantic Ave. New York 4, N. Y. Omoho, Nebr. P.O. Box 631, Bell, Cal. it will be out of the way of the permanent basement wall pour.

With excavation completed, reinforcing cages are set between the piles, and a steel mat is placed to reinforce the face of the basement wall. Wood forms are erected behind, and braced to, the timber wale. Then the wall is poured to encase all the concrete piles and incorporate them into the foundation

Hole Digger

Key to the operation is the tool (designed by Lee R. Ashmore, president of the Sure Bottom Foundation Co., Houston, subcontractor on the job) that digs the semicircular holes. An 18-in. circular hole is first drilled to the prescribed depth and enlarged to a semicircular hole by the Ashmore tool, which has a 26-in. flat face with ears projecting from an 18-in. circular bucket to which it is attached. The assembly is placed in the drilled hole, and is driven down by an air hammer. As the tool goes down, the ears cut the dirt away, forcing it into the bucket below. When the bucket is filled, the tool is raised and the material emptied through hinged door at the bottom. A square driving head at the top of the assembly, and a square pinned shaft, socketed into it, keep the tool from twisting off true during driving. In all, 156 holes were put down and enlarged this way, at the rate of ten per day, around three sides of the building.

Contractor for the \$3,000,000 Sakowitz Bros. store is the Tellepsen Construction Co., Houston. Alfred C. Finn is architect. Robert J. Cummins, consulting engineer, and Mr. Ashmore collaborated on the new foundation method.

Sorry ...

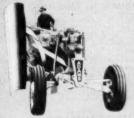
Were we confused!! Our G2 department went off the beam in identifying the equipment shown on our May cover. We said it was a Northwest crane at work, and that's right-otherwise we were all wet. Al Garlinghouse protests vehemently that we mis-labled his Gar-Bro concrete bucket with the patent Accordion Hopper. We're now properly educated, thank you, Al. The truck mixer is actually a Rex, though we identified it otherwise. The printer got too much red on the Northwest cab. But it was a swell cover, anyway.

gives you this exclusive combination of advantages . . .

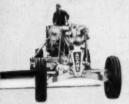
- IDE RANGE OF BLADE POSITIONS—Without Mechanical Adjust-ents . . . Saves Time in Adapting Machine to Needed Cuts.



Ditch Cutting



High Bank Cutting



Reach Outside of Wheels



Reverse Ditching or Blading



On most construction work-ditching, low and high bank slopes, wide shoulder reach, etc.—the operator of an Adams Motor Grader obtains all necessary blade positions right from his station, without making any mechanical adjustments, such as shifting blade on circle or changing lift linkage. Only on occasional work, calling for extreme reach, is it

necessary to shift blade on circle.

The ability of Adams Motor Graders to provide such a wide range of blade positions-without mechanical adjustments-is one of the important features (see list above) that makes them the fastest, most efficient and economical graders on the market. See your local Adams dealer for full particulars.

J. D. ADAMS MANUFACTURING CO. - INDIANAPOLIS, INDIANA

Make your next motor grader an

Research Reveals Average of Only 39 Percent Actual Production Working Time on Highway Jobs After Weather, Downtime and Other Troubles Are Deducted From Scheduled Work Week.

DELAYS are Killing Your Equipment Output

HIGHWAY CONSTRUCTION EQUIPMENT is producing only 39% of available working timewith some jobs running as low as 20%. These startling figures result from deducting all the delays re-

sulting from weather, breakdowns, servicing, cigarette time, specification squabbles and other operating troubles on 33 highway projects. They are reported in a series of studies made by a joint committee of Public Roads Administration and the Highway Research Board, released at intervals over the last year. Following is the summary of 16 reports released to date.

PRODUCTION AVERAGE ALL EQUIPMENT

	Percent total avail, time	
	Range	Average
Total working time	100	100
Major delays (over 15 min)	3363	45
Net avail. work time	37-67	55
Minor delays (less 15 min)	4-28	16
Actual productive time	2055	39

Note-weather delays are included in above.

CRAWLER TRACTOR-SCRAPER UNITS Over-all working efficiency:

	Percent total avail. time	
	Range	Average
Total working time	100	100
Major delays (over 15 min)	1466	37
Net avail. work time	34-86	63
Minor delays (less 15 min)	3-12	4
Actual productive time	31-78	59

Nature of major delays:

	total	ent avail time
Weather: rain, cold, wet grade		25
Maintenance and repair equipment		8
Waiting for other operations		2
Other		2
To	tal	37

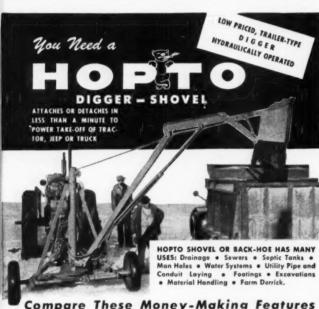
Nature of minor delays:

[Minor delay percentage is based on net wor time available after deducting major delays.]

	Perce net av work t	
Repairs and maintenance		2
Wait pusher		1
Maintenance haul road		1
Personnel		1
Other		1
	Total	6

Operating cycle of crawler tractor-scraper:

	Range	Average
Load-minutes	1.1-2.9	1.68
Dump and turn-min	0.41.3	0.75
Turn in cut-min	0.3-0.7	0.42
Total time constant-min	1.9-4.2	2.85
Haul distance-ft	130-1,300	536
Haul speed (loaded)-ft/min	165-470	322
Return speed-ft/min	230-480	345
Pay load-% struck capacity	56106	79



Compare These Money-Making Features

- * Digs over 9' deep and still loads into trucks
- * Hydraulic Cylinders are chrome plated to withstand weather.
- + Independent, double-acting hydraulic cylinders and control valves for dipper stick and boom.
- * Swing is controlled by two singleacting cylinders.
- * Highly transportable from job to job without any special permit.

Full 180° swing, finger-tip operation, low first cost, minimum maintenance, and 15-30 yard hourly capacity adapts HOPTO to a wide variety of profitable work. And HOPTO needs no counter weights ... NO swing clearance! Three types of buckets, 14" to 24" widths, are available for HOPTO:-enclosed, skeleton, and shovel bucket. Reversible teeth are of cast alloyed steel, heat treated for longer life.



FREE FOLDER Bulletin 19502, giving complete in-formation, is yours for the asking.

A COMPLETE LINE OF BETTER, MORE DEPENDABLE TRENCH EXCAVATORS AND



WHEEL TRACTOR-SCRAPER UNITS Over-all working efficiency

Percent total avail. time	
Range	Average
100	100
28-85	65
15-72	35
3-12	7
1261	28
	100 28-85 15-72 3-12

Nature of major delays:

		Percent total avail work time	
Weather: rain, cold, wet grade		54	
Open up cuts, trimming		4	
Maintenance and repair equipment		3	
Lack of operators		3	
Other		1	
Tot	al	65	

Nature of minor delays:

	Percent net avail. work time	
Wait pusher		12
Repair, maintenance of equipment		2
Maintenance haul road		1
Personnel		1
Contractor's traffic		1
Other		2
To	tal	19

Operating cycle of wheel tractor-scraper:

	Range	Average
Load-minutes	0.9-2.2	1.36
Dump and turn-min	0.4-0.7	0.56
Turn in cut-min	0.2-0.4	0.31
Total time constant-min	1.8-3.3	2.23
Haul distance—ft	420-1,890	873
Haul speed loaded-ft/min	465-1,100	676
Return speed-ft/min	370-1,200	714
Pay load-% struck capacit	y 68-94	84

PUSH TRACTOR OPERATIONS

Time cycle of push and pull crawler tractors used in connection with wheel tractor-scraper units:

	Time in	minutes
	Range	Average
Assist loading scraper	0.91.4	1.1
Backing, turning, engaging	0.5-1.2	8.0
Wait next scraper	0.0-1.6	0.4
Minor delays	0.00.8	0.2
Total	1 1.5-3.2	2.5

Note-Little difference revealed between pusher and pulling operations.

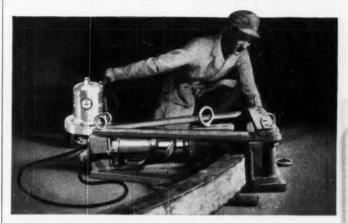
TOURNAPULL SUPER C OPERATIONS Operating cycle (exclusive of delays):

	Range	Average
Load - minutes	1.1-2.2	1.4
Dump and turn-min	0.4-0.7	0.6
Turn in cut-min	0.2-0.5	0.4
Total time constant-min	2.0-3.2	2.4
Haul distance—ft	420-1,890	860
Haul speed loaded-ft/min	470-1,110	620
Return speed-ft/min	370-1,200	660
Pay haul distance-ft	540-2,150	940
Loading distance—ft	120-260	160
Dumping distance—ft	60180	110
Pay yardage—cu yd per load	8.2-11.0	9.6

(Continued on page 98)

MOTORIZE

your hydraulic equipment with this low-cost, portable pump



YOU CAN HOOK THE MOTOR-DRIVEN PUMP TO HAND JACKS, TOO!

The P-182 Blackhawk electrically-driven high-pressure pump serves one or more hydraulic hand jacks or rams. Hand jacks are easily modified in the field for use with the P-182. Above — the P-182 operates a 30-ton Blackhawk Jack in a special shop-built strut-bender... one of many P-182 applications.



ZIP UP MAINTENANCE

Here the motor-driven pump operates a 50-ton Blackhawk "Porto-Power" ram which is harnessed to pull an electric motor gear. Other "Porto-Power" rams include 2, 4, 7, 10 and 20-ton sizes.



TRIPLE YOUR OUTPUT!

A Blackhawk Pipe Bender is fast. But connect it to the motorized pump (as above) and it can turn out three times the work, particularly on repetitive or production bending.



Ask for **Porto-Power** Pump No. P-182

Weighs only 84 lbs.
Develops 10,000
p.s.i., Serves one or
more rams, combines
motor, pump, valves
and reservoir in one
unit. Only \$264.
Buy from leading
supply houses.
Price subject to change

BLACKHAWK

Hydraulic "Porto-Power" Equipment

,	T. Comment
	BLACKHAWK MFG. CO., Dept. P-2360 Milwaukee 1, Wis.
	Rush free literature on the P-182 mo- tor-driven pump and other Blackhawk Hydraulic Equipment.
	Name
	Firm
	Address

MOTOR GRADER

Here's a value that invites comparison

Compare THE PRICE!

Compare THE FEATURES!

Compare THE PERFORMANCE!

. . and you will agree

THE ALLIS-CHALMERS MODEL D IS YOUR BEST BUY...BY A LONG WAY

F.O.B. Springfield, III. Taxes, attachments and export preparation extra. Price subject to change without notice.

Not a converted job . . . it's ENGINEERED NEW YOU BIG FROM THE GROUND UP ____ to bring you to grader design and performance advantages:

Design Tandem High Arch-

Drive Tubular Frame

Type Front Axle Drop Down Transmission

Roll-Away Moldboard Power Hydraulic

Visibility

Controls Complete Operator Comfort

Simplified Servicing

Plus special attachments that widen its use Flus special attachments that widen its use-fulness — Rear-End Loader, Scarifier, Windrow fulness - Rear-End Loader, Scattler, Winarow Eliminator, Wyr or Blade-Type Snowplows. Also, and Eliminator, V. or Blade-Type Snowplows. Also, various other accessories.

"Seeing is Believing." Ask Your Allis-Chalmers Dealer for a Demonstration.



ALLIS-CHALMERS

MODEL



WEIGHT - 8,500 lb. (bare)

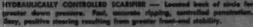
BRAKE HP. - 34.7 (famous Allis-Chalmers gasoline engine)

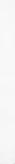
SPEEDS - four forward, 2.40 to 18.61 mph.; reverse to 2.9









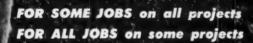












Maintains dirt and gravel roads and streets. Cuts sod from shoulders. Handles light construction. Builds and cleans ditches. Slopes banks - up to 2:1.

Levels sub-grades. Ideal for maintaining haul roads and finishing work. Plows snow. Loads all types of materials. Scarifies.

Does outstanding work on every job — the year around, at big savings.

MILWAUKEE 1, U. S. A.

For Greater Production...For Easier Operation...For Simplified Servicing

HEAD PROTECTION

in this famous ALL-PURPOSE HATI



Semilaria (Sept.)

√ HIGH STRENGTH

IN SCORCHING SUN

√HIGH STRENGTH

IN FREEZING BLASTS

Skullgards are built to take it and like it. Under the most extreme conditions of exposure, Skullgards retain full head-protecting strength—they will not soften under summer heat, nor weaken in sub-zero cold. • Skullgards are the comfort leaders, too—with easy, lightweight wearability. Get the facts on America's most popular work hats; write for Bulletin DK-15.

MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS AND MEADE STREETS - PITTSBURGH 8, PA.

At Your Servi

54 BRANCH OFFICES IN THE UNITED STATES AND CANADA

(Continued from page 95)

POWER SHOVEL OPERATIONS Over-all working efficiency

	Percent total avail. work time	
	Range	Average
Total avail. work time	100	100
Major delays (over 15 min)	480	42
Net avail. work time	20-96	58
Minor delays less 15 min)	5-42	21
Actual productive time	14-70	37

Nature of major delays:

	tota	rcent l avail k time
Rain and wet grade		28
Shovel repairs, maintenance		10
Open up cuts		1
Blasting		1
Moves		1
Other		1
	Total	42

Nature of minor delays:

	ne	ercent t avail. rk time
Lack haul units		12
Trimming, clean up site		7
Short moves		4
Shovel repairs, maintenance		4
Wait for haul unit spotting		3
Maintain work area, haul roads		2
Handling rocks, stumps		2
Personnel		1
Other		1.
	Total	36

Dipper Load Cycle Characteristics (11/4 to 21/2 cu yd capacity)

	Range	Average
Load seconds	613	8.9
Swing-sec	4-10	5.8
Dump—sec	2-8	3.2
Return swing-sec	5-9	6.3
Total dipper cycle-sec	19-35	24.2
Angle of swing-deg	62-102	80
Average dipper pay load -		
% capacity	35-88	62

Note-all delays excluded in above figures.

EUCLID LOADER OPERATIONS Over-all working efficiency

	Percent total avail time
Total avail, work time	100
Major delays	39
Net work time	61
Minor delays	15
Productive time	46
Turning, exchange time	15
Actual loading time	31

Nature of major delays:

	total	ent avail time
Rain		12
Wet grade		5
Maintenance and repair equipment		19
Other		3
To	tal	39

Nature of minor delays:

	Per net work	
Shortage hauling units		17
Other hauling delays		1
Maintenance and repair equipment		2
Deadheading		1
Rock handling		1
Starting, closing down		1
Other		2
75-	tal.	25

Average performance characteristics:

	Averag
Loading-minutes	0.71
Exchange hauling units min	0.16
Turning time min	1.05
Loading distance per load—ft	99
Cross section per bite-sq ft	3.3
Loading speed ft min	139
Pay load 13-yd wagon -cu yd	12.1
Production per hr total avail. time -cu yd	321
Production per hr net avail. time-cu yd	527
Production per hr productive time-cu yd	705
Production per hr loading time—cu ya	1,035

BITUMINOUS FINISHERS Over-all operating efficiency:

	avail. work tim	
	Range	Avera
Total available work time	100	100
Major delays (over 15 min)	28-77	57
Net available work time	23-72	43
Minor delays (less 15 min)	12-43	22
Actual productive time	11-33	21

Nature of major delays:

ne	rcent t avail k tim
Rain, wet, cold	23
Shortage materials	12
Delays due to auxiliary operation	9
Lack of mix at paver	4
Equipment repairs, maintenance (plant)	3
Equipment repairs, maintenance (pavers)	3
Moves	2
Other	1
Total	57

Nature of minor delays:

	net avail work time
Lack of mix at paver	43
Delays due to auxiliary operation	4
Paver repairs, maintenance	2
Personnel	1.
Short moves	1
Tot	ai 51

BITUMINOUS MIX TRUCKS Operating cycle of mix trucks:

	Range	Average
Time at plant-minutes	3.8-16.1	8.2
Time at paver-min	3.0-7.9	5.3
Delays per trip-min	10.6-26.7	18.6
Total time constant-min	22.0-50.3	32.1
Haul speed loaded-mph	16.3-37.6	27.8
Return speed empty-mph	22.3-41.8	32.3

(Continued on page 100)



The Prime Mover multiplies one man into four. Compactness allows accessibility into close quarters, from basement to top floor.



F YOU HAVE



THE PRIME-MOVER BRINGS QUICK RELIEF



Bucket holds 1000 lbs. of wet or dry material

Climbs 20% grades fully loaded Dumps mechanically, by foot pedal Turns in own length 631/2", width 311/5"

Runs 8 hours on 3 gal. of gas

You simply start the engine on a Prime-Mover and it goes into action fast. Contractors have discovered that one man and a Prime-Mover can greatly assist in breaking troublesome construction bottlenecks. This machine is especially fitted for handling wet concrete, bagged cement, earth, sand, gravel, and rubbish, too. And all day long the Prime-Mover carries full capacity loads—with a saving to you in money and men. (In money, as high as \$35 a day—in men, reduced fatigue and fewer needed.)

THE PRIME-MOVER CO., MUSCATINE, IOWA

THE PRIME-MOVER CO., MUSCATINE, IOWA

CM6

Gentlemen: Please send me details on PRIME-MOVER for contractors.

YOUR NAME

FIRM NAME

CITY



*Price based on complete machine, less truck, F.O.B. Waverly, Iowa. Trucks available through factory for \$1350 to \$1850, plus small mounting charge. All prices subject to change without notice.

WHY TIE UP BIG EQUIPMENT, when so many of your jobs can be done faster, easier, at less cost with a low-priced Bantam? You'll find Bantam ideal for spotting steel, lifting pipe . . . loading and stockpiling materials . . . digging basements, sewer and water lines, etc. Gives you BIG SAVINGS on production jobs . . . BIG EARNINGS on scattered jobs. In fact, there's still time for a Bantam to pay for itself on your operations yet this year. So don't delay — get your Bantam order in TODAY!

TEAR OFF and MAIL THIS HAM	NDY COUPON NOW!
SCHIELD BANTAM CO. 221 Park St., Waverly, Iowa	Shovel Crane Dragline
Send full details on new Bantam checked at right	☐ Clamshell ☐ Trench Hoe ☐ Pile Driver
Name	
Occupation or Business	
Address	
City	State SB-C-4
	-

The THRIFTY machine with the BIG earning range

(Continued from page 99)

Cycle element of mix trucks:

	ti	me nutes
Time at plant per trip:		
Loading-min		6.3
Maneuvering, weigh, etcmin		1.9
	Total	8.2
Time at finisher per trip:		
Discharge load		3.8
Maneuvering, etc.		1.5
	Total	5.3
Delays per trip:		
At plant		14.8
Other		3.8
	Total	18.6

BATCH TYPE ASPHALT PLANTS Over-all operating efficiency:

	Percent total avail. work time	
	Range	Average
Total available work time	100	100
Major delays (over 15 min)	2565	42
Net available work time	3575	58
Minor delays (less 15 min)	7-21	13
Actual productive time	2168	45

Nature of major delays:

	total avail. work time
Rain, cold, wet	28
Delays at paving site	5
Equipment repairs, maintenance	3
Shortage materials	3
Lack haul units	2
Other	1
Total	42

Nature of minor delays:

	Percent net avail work time
Shortage dried aggregate	11
Lack haul units	5
Equipment repairs, maintenance	2
Personnel	2
Other	2
Total	22

Concrete Equipment

BATCH TRUCKS ON CONCRETE PAVING Summary of operating cycles:

	Range	Average
Time at batch plant		
per trip-min	3.0-5.7	4.24
Time at paver per trip-min	1.9-3.1	2.48
Miscellaneous delays per		
trip-min	2.5-8.8	5.45
Total time constant-min	10.5-15.2	12.17
Haul distance-mi	0.9-4.7	2.11
Haul speed loaded-mph	16.6-31.0	21.1
Return speed empty-mph	17.8-37.3	23.5

(Continued on page 103)

WICKWIRE ROPE A PRODUCT OF CER

Ask any user...you'll find them everywhere

In scores of industries, users of Wickwire Rope have developed an affectionate respect for its performance, safety and long life. And, for true economy, they use Wickwire's WISSCOLAY® Preformed, It lasts longer - is easier to cut, splice and install. It's kink-resistant and safer to handle. Wickwire Distributors and Rope Engineers, in key cities everywhere, are prepared to render prompt service in meeting your wire rope needs. Wickwire Rope Sales Office and Plant - Palmer, Mass.

IN THE EAST—Wickwire Spencer Steel Div. of C. F. &...
500 Fifth Ave., New York 18, N. Y.
N THE ROCKIES—The Colorade Fuel and Iron Corp.
Continental Oil Bidg., Denver, Colo.
ON THE WEST COAST—The California Wire Cloth Corp.
1080—19th Ave., Oakland 6, Cal.



LOGGING



MINING



TRANSPORTATION



MANUFACTURING



PETROLEUM



CONSTRUCTION



MARINE

They Broke Tunnel-Driving Records on the Owens River Gorge Project!



... and Atlas explosives were a part of the record-breaking team!

WATER for Los Angeles power in a hurry! That's the order of every day for the tunnel stiffs of Owens Tunnel Contractors. Blasting through rock for the Los Angeles Department of Water Supply and Power, they've broken record after record in their race against time.

78.77 feet average drive per day! 104 feet in one day! 356.81 cubic yards per day, average! 2,442 feet in a record-breaking 31-day period! That's tunnel-driving history!

We are proud to have supplied explosives to the men whose skill and hard work made such records possible!

On your next blasting job, call on Atlas, originator of the ROCKMASTER* milli-second delay blasting system and many other improvements in explosives and blasting methods. Atlas supplies the *right* explosives—plus *service*—for tunnel-driving, excavating, road-building, pipeline ditching.

fileg. U. S. Pat. Off.





ATLAS POWDER COMPANY, Wilmington 99, Del. Offices in principal cities • Cable Address-Atpowco

(Continued from page 100)

Operating cycle of two-batch trucks:

	Average time minutes
Time at batch plant per trip	
Maneuvering in plant yard	1.98
Set up, lock gates, cover, etc.	0.43
Load aggregates	0.84
Load cement	0.99
Total at plant	4.24
Time at paver per trip:	
Maneuvers at paver	0.77
Exchange	0.26
Dump batches	1.45
Total at paver*	2.48
Exclusive of delays.	
Minor delays (less 15 min) per trip:	
Wait at bins	0.33
Wait at paver	3.41
Other minor delays	1.71
Total delays	5.45

AUXILIARY EQUIPMENT:

	Percent productive rate of paver	
	Range	Average
Aggregate batch equipment		
and cranes	90 - 227	129
Form graders, fine graders,		
planers	98-322	197
Spreaders and finishers	79-381	174
Average all auxiliary		
equipment		166

Ed. note—These figures indicate all contractors on test jobs furnished ample auxiliary equipment.

34E DUAL DRUM PAVERS Over-all working efficiency:

	Percent total avail. work time	
	Rance	Average
Total avail. work time	100	100
Major delays	23-60	38
Net avail, work time	4077	62
Minor delays	14-23	18
Actual productive work time	2457	44

Nature of major delays:

	tota	ercent il avai k time
Rain and wet grade		15
Shortage cement		6
Major moves		6
Paver repairs		5
Wait auxiliary operations		4
Shortage aggregates or water		1
Other		1
	Total	38

Nature of minor delays:

	Percent net avail work time
Shortage batch trucks	7
Batch truck dump delays	4
Paver short moves	4

Shortage ag	gregate at batcher	3
Paver repair	rs, maintenance	2
Wait spread	ler, finisher	2
Split discha	rge batch	1.
Shortage wa	iter	1
Wait joint p	placement	1
Personnel		1
Other		3
	Total	29

These studies were made by a joint committee of PRA and HRB, consisting of: H. S. Fairbank, PRA, Washington, chairman; Harry J. Kirk, AGC, Washington; Fred B. Farrell, PRA, Washington; T. H.

Dennis, California Division of Highways, Sacramento: Morris E. DeWitt, Porter-DeWitt Construction Co., Poplar Bluff, Mo.; J. L. Dixon, Texas Highway Department, San Antonio; George W. Mc-Alpin, West Virginia State Road Commission, Charleston; H. A. Radzikowski, PRA, Washington; Charles W. Smith, Smith Engineering and Construction Co., Pensacola, Fla.; Rex M. Whitten, Missouri State Highway Department, Jefferson City; and Dwight W. Winkelman, D. W. Winkelman Co., Syracuse, N. Y.



USE LACLEDE STEEL JOISTS

- FASTER CONSTRUCTION Light . . easily handled . . prefabricated to speed the job.
- ADAPTABLE They combine efficient structural function with architectural versatility.
- ECONOMICAL They assure more room at less cost. Their high strength plus light weight provide substantial savings in foundation and framework, and utility conduits, pipes and lines are easily threaded through the open webs.

Specify These Laclede Products For Your Construction Needs Multi-Rib Reinfarcing Bars.. Steel Pipe.. Steel Joists & Nailer Joists.. Welded Wire Fabric.. Form & Tie Wire.. Round & Square Spirals.. Conduit.. Corrugated Steel Centering.. Electrical Weld & Gas Weld Tubing.





STEAM PILE HAMMERS

The dependability of Warrington - Vulcan pile hammers has been proved thousands of times on job after tough job all over the world. Men who use them will tell you they're really great hammers, rapid, rugged and economical, simple in design and operation . . built to meet requirements established by experienced contractors.

Warrington-Vulcan hammers operate at medium steam pressure, delivering a moderate frequency of low velocity blows from a relatively heavy ram to drive piles of any description.

Write today for complete details and the name of your nearest distributor.





NEW LORAIN TL20 wide-gage backhoe excavates trench on steep slope for R. B. Potashnik on Poplar Bluff, Mo., pipe-line loop, Mississippi River Fuel Co. pipe-line project. Rig is snubbed by cable to crawler tractor at top of slope.

Thew Designs Wide-Gage Backhoe for Odd-Job Pipeline Trenching

TO MEET the need for a special trench excavator for odd digging jobs and cleanup work on pipeline operations, Thew Shovel Co. has come out with its TL20 widegage backhoe that is proving popular with pipe-line contractors.

The wide gage permits the machine to straddle a trench for cleaning up slides and bank cave-ins. The rig also is being used for trenching slopes too steep for digging with conventional wheel or ladder trenching machines.

Here are some views of the backhoe at work.



BROAD GAGE of Lorain special backhoe permits straddling of trench for cleanup even in badly caved sections, as shown here on Williams Bros. Corp. pipe-line job in southern Ohio for Tevas Gas Co.



WHERE obstructions interrupt normal ditching, handy wide-gage hoe can straddle trench for excevation later. This is on R. B. Poteshnik's Poplar Bluff loop project.



LEADS AGAIN WITH A NEW INVENTION THAT CUTS BLADE COSTS

DIAL-A-CLITand SAVE-A-BLADE

SAVE-A-BLADE DIAL Properly Cushion's BLADE PRESSURE for LONGEST BLADE LIFE

FREE TRIAL

Don't wonder about the greater profits you'll make with the NEW Clipper SAVE-A-BLADE Dial, A FREE TRIAL will convince you! Only will convince you! Only thru Clipper's outstand-ing policy of FREE TRIAL are you guaran-teed . ACTUAL TESTING ON THE JOB . FULL SATISFAC-TION . AT NO OB-LIGATION!

... by the Originators of Masonry Saws



Just turn the "SAVE-A-BLADE" Dial to the hardness of the material you're cutting, and the Clipper Pressure Equalizer Spring automatically sets to the tension that guarantees faster cutting and longest blade life-Whether the material is HARD or SOFT . . Whether using Diamond or Abrasive Blades . Cutting Wet or Dry with the "DUSTLESS" Model HD.

Another addition to those already famous Clipper features
"SELECT-A-NOTCH"— "ADJUST-A-CUT" - " DRY" Pump — and — "ONE-SPOT" Operation.

GUARDS YOUR VALUABLE DIAMOND BLADES

The "DIAMOND" setting on your SAVE-A-BLADE Dial automatically cushions the blade against shock by relieving rim of excess pressure or binding.



BRICK (MEDIUM)



FOR MEDIUM MATERIAL



GIVES YOU ALL THESE EXCLUSIVE FEATURES!



Makes your blades last longer Because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials.



9 MODELS PRICED FROM \$195

One man easily adjusts Cutting Head to desired height. Whether cutting 12" or 1" material Opera-tor's hands merely guide. All weight



Merely pull the knob — and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob — and Head is locked in the desired position.



No need to remove belt when cut-



From ONE SPOT at the front of his Clipper Saw the Operator per-forms every cutting operation and makes every saw adjustment. Never

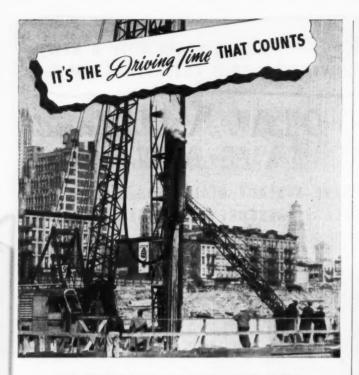
Serving the World as the World's Largest Manufacturer of Masoury Saws

DIRECT FROM FACTORY ABRASIVE BLADE ABRAS KANSAS CITY 8, MISSOURI Cable Address: CLIPPER K. C. Mo. CUT WET or CUT DRY PHILADELPHIA . ST. LOUIS . CLEVELAND . AUSTIN, TEX. There's a Clipper Blade SAN FRANCISCO . CHICAGO . NEW YORK . PITTSBURGH for Every Job!

MAIL THE COUPON NOW! CLIPPER MANUFACTURING COMPANY 80

2809 W. WARWICK . KANSAS CITY 8. MISSOURI Send TODAY information on the FREE TRIAL offer and com-plete literature and prices on the 1950 Clipper Masonry Saws. ZONE

June 1950 - CONSTRUCTION Methods and Equipment - Page 105



CONTINENTAL'S PILE DRIVING HOSE **ELIMINATES COSTLY SHUT-DOWNS!**

When pile driving hose "strips" its tube and clogs the hammerhead, the driving operation grinds to a stop. You can prevent these costly shut-downs with Continental's Pile Driving Hose. The tube is "locked" to the carcass. You just can't pull it loose with-

out tearing the hose to pieces. Continental's Pile Driving Hose is an 8-ply, heavy-duty workhorse that stays on the job . . . and helps protect your profit.

* * * * Equip your rigs now with Continental's Pile Driving Hose.

PROMPT DELIVERY FROM "NEAR-THE-JOB" WAREHOUSES

To get "right-away" service, call the nearest Continental branch listed below. These warehouses carry large stocks of hose, couplings, boots, clothing and gloves. Get acquainted now with prompt, dependable Continental Warehouse Service.



Rubber by CONTINENTAL

RUBBER WORKS

1989 LIBERTY BOULEVARD . ERIE, PENNSYLVANIA

BRANCHES

Baltimore, Md Chicago III

Cleveland, Ohio Dayton, Ohio Hartford, Conn

Kontas City Mo. Las Angeles, Calif. New York, N. Y Philadelphia, Pa

Pittsburgh, Pa. San Francisco, Calif Syrocuse, N. Y.

Walbridge Honored For 50 Years In Construction

HALF A CENTURY of service in construction rated George B. Walbridge, Detroit contractor, special honors at a recent Michigan Building Industry banquet. Walbridge, affectionately known as Colonel because of his Spanish war service, is now Chairman of the Board of Walbridge-Aldinger Construction Co., Detroit. Though retired from active duty, he still serves as consultant and arbitrator for the industry.

Walbridge, graduate of both



GEORGE B. WALBRIDGE (left) receives a testimonial from Alden B. Dow, president of Michigan Society of Architects, representing the Michigan Building Industry, for 50 years of service in construction. More than 1,500 members of building industry attended testi-monial banquet in Detroit.

Cornell and Lafayette, started his career with the Daniel A. Burnham architectural firm in Chicago. but switched to the other side of the fence in 1905 as general superintendent for Heddon Construction Co. in New York. In 1912 he went with George A. Fuller Co., and in 1916 formed a partnership with A. H. Aldinger in Detroit.

He served in the Construction Division. Quartermaster Corps, in World War I. Upon return to the contracting business, he helped organize the General Builders Association of Detroit, now an AGC chapter. In 1925 Walbridge was national AGC president.

NEXT MONTH

Construction Methods and Equipment's Annual Maintenance Issue

WHEN THE

you'll be thankful for

the DEPENDABILITY of TRAYLOR STONE CRUSHING MACHINERY

Failure to keep contract work moving on schedule can cost you thousands of dollars in wages and penalities. Concreting operations will never slow down for lack of approved aggregate . . . and sand . . . if Traylor Stone Crushing Machinery is on the job. For almost half a century, Traylor equipment has been the reliable standby of quarry operators all over the world. Its reputation for dependability has been built on the bed-rock of field performance. Traylor's complete line of stone crushing machinery . . . gyratory, jaw, reduction crushers, and rod mills . . . makes it possible to take advantage of Traylor economy and reliability through all stages of aggregate production from run-of-quarry rock to sand.

If you are considering the possibility of jobproduced aggregate, it will pay you to discuss your requirements with a Traylor sales engineer. He can design an aggregate plant "Traylor-made" to fit your needs. No obligation . . . just drop us a line



TRAYLOR ROD MILLS are built to meet individual requirements.

ALL TRAYLOR CRUSHERS are equipped with Traylor's famous curved crushing sur-

faces. This exclusive feature eliminates choking and packing . . . insures dependable, continuous production of uniform, *cubical* aggregate.

TRAYLOR GYRATORY CRUSHERS

requiring

TRAVLOR

sizes for primary reduc-

REDUCTION

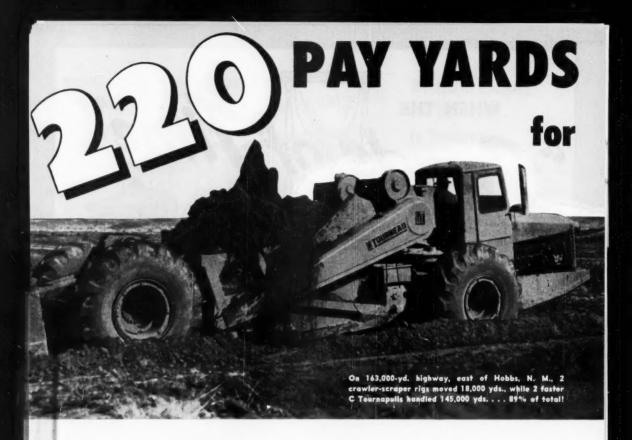
6 sizes for



TRAYLOR ENGINEERING & MANUFACTURING CO. 159 Mill St., Allentown, Pa.

Sales Offices: New York, N. Y., Chicago, Ill., Los Angeles, Calif. Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P. Q.

A "TRAYLOR" LEADS TO GREATER PROFITS



Wylie Brothers, of Albuquerque, New Mexico, bad 163,000 yards of red sandy clay to move on realignment of 17 miles of U.S. Hwy. 62-180, east of Hobbs. Grading consisted of building some new sections, widening others. Much of the material had to be borrowed from roadside pits along the right-of-way, and hauled over existing highway through open traffic.

2 "C's" move 89% of yardage

To complete the work within 2 months' time, Wylie Brothers drove in their 2 rubber-tired C Roadsters . . . with them, moved 145,000 yards on fast dirt moving cycles that set a new high for Tournapull production.

7500' cycle every 5 min.

On one section of the job, where Tournapulls were loading out of roadside borrow pit, they had 500' of travel to right-of-way . . . made sharp turn through a gate onto open-traffic highway . . . hauled the remaining 3250' on pavement. In spite of short turns and frequent traffic delays, each "C" completed a 7500' cycle every 5 minutes.

Actual road speeds, clocked with car on main highway, showed that the Tournapulls quickly accelerated up to 25 m.p.h. loaded . . . and returned empty at speeds up to 32 m.p.h.

According to contractor's own records, each pusher-loaded "C" hauled 10 pay yards per trip...averaged 11 trips an hour, for a combined output of 220 pay yards hourly on the 7500' cycle. "These C Roadsters are all you claim," says Claude B. Wylie, partner... "best dirtmover I've ever had... and I've built a lot of roads in this sand country."

1 hr. 15 min. between jobs

Prior to this U.S. 62-180 contract, Wylie Brothers used their electric-control Tournapulls to move 130,000 yards of brown blow sand on another state highway job, south of Hobbs, New Mexico. One hour and 15 minutes after completing the first job, the rigs had driven 25 miles, through town, and were ready to start moving dirt on this second roadbuilding job.

Better find out what Tournapull's faster cycles on the job... and faster moves between jobs, can mean to your profits! Call your LeTourneau Distributor, or write TODAY.





TOURNAPULLS

MORE YARDS PER HOUR WITH RUBBER-TIRED POWER

HOURLY on 7500' cycles

Wylie Brothers' 2 C TOURNAPULLS

"We are getting far more yardage than we estimated or even dared to hope for ... these 'C's load and move sand a lot easier than tractors and scrapers."

Claude B. Wylie, PARTNER

"You have to see these rigs and time them to believe it . . . will finish this job

Bob Hardy, JOB SUP'T.

"I've been operating Super C Tournapulls for almost 10 years, but C Roadsters are the best yet . . . don't need
that '4 o'clock pause' with these new
electric machines . . . and I'm not all in
when shift is over . . . can haul more
dirt with the 'electrics' than any ma-

E. 7. (Slim) Donovan,

OPERATOR



Mail to: R. G. LeTOURNEAU, INC., PEORIA, ILL. for more information on

STREET____

Type of work handled.

STATE

☐ 17 cu. yd. rear-dump Tournarocker
 ☐ 15 cu. yd. bottom-dump Tournahopper



Here's a blueprint to LOW hauling costs!

DODGE trucks are Job-Rated for extra savings!

You can enjoy rock-bottom transportation costs and a brighter profit picture when you invest in a Dodge "Job-Rated" Truck.

You'll get a truck that's "Job-Rated" to provide peak performance at lowest possible cost on the toughest of assignments.

Its engine will be "Job-Rated" to give you power

to spare-with maximum gas and oil economy. Every chassis unit -- practically every nut and bolt -will also be "Job-Rated." That will cut your operating and upkeep costs.

Your Dodge dealer can help you bridge the gap between profits and losses by showing you a truck that's sized to your job. It will be "Job-Rated"! See him soon.



TK5 are priced with the lowest With all their extra value

How to Install Glass Block Panels

SAVINGS UP TO 25% are possible with a simplified method of installing small (25-sq ft maximum) panels of 6- or 8-in. glass block. As shown below, the technique eliminates wall ties, anchors, expansion joints and most calking.—Photos from Owens-Illinois Glass Company.



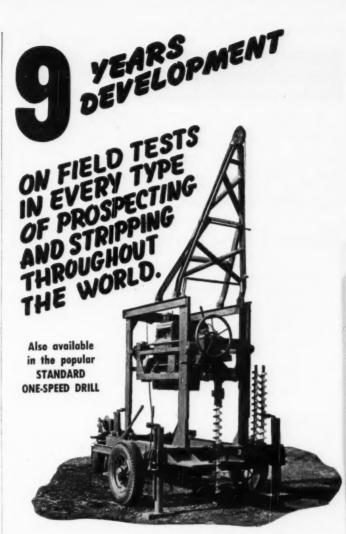
1 TROWEL HEAVY COAT of asphalt emulsion on jams and sills of panel opening. Asphalt should cover 3½-in. width.



2 LAY BLOCK with standard cement and lime mortar joints 1/4-in. thick, taking care that all joints are completely filled.



3 AFTER JOINTS are tooled and panel is cleaned, remove mortar from expansion space at head, then calk with waterproof mastic.



The Parmanco Two-Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-quarter inch equipment. Under favorable conditions it is being used to greater depths and can be used with six-inch equipment.

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS



Shovel lies down on the job

The experienced shovel operator on this West Virginia job didn't know why it happened.

He had just lifted a 1000-pound stone, swung to the left and reached a position with the boom pointing directly ahead. The shovel was on a firm base.

But suddenly the shovel tipped and fell on its right side, causing extensive damage to itself.

Fortunately, operations could be resumed quickly because the owner had Hartford Contractors' Equipment Insurance. Loss paid... \$3560.04.

Think what the loss or damage of equipment needed on the job could mean to you! You'd face big losses...might have to suspend operations unless fortified by adequate insurance protection. Hartford Contractors' Equipment Insurance protects you against this ever present threat to your business... covering you against loss or damage to equipment due to a wide variety of causes. Send coupon for a sample policy and descriptive bulletin...or see your Hartford agent or insurance broker. In more than 5000 communities you can get in touch with your Hartford agent by calling Western Union, asking for "Operator 25."

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY



HARTFORD

FIRE INSURANCE COMPANY

Hartford 15, Connecticut

Please send sample policy and description of Contractors' Equipment Insurance.

Name

Firm Name

Address

State

IMPACT TOOL drills column to hold mullion cover, while cover itself serves as templet. Later, same tool will also tap holes.

Versatile Tool Cuts Labor Cost On School Project

TO DRILL AND TAP more than 1,200 holes on a school job in East St. Louis, Ill., contractor Ferd Ganschinietz invested in an Ingersoll-Rand electric Impactool. It cut his costs for the operation by two-thirds, saving five times the cost of the tool on this one job alone.

The holes were for attaching 208 aluminum mullion covers to structural steel I-beams between window openings. The covers came pre-drilled, but matching holes for ½-in. aluminum screws had to be drilled ½ in. into the I-beams and then tapped. The cover was used as a templet to locate the holes, and was held in place while the tool drilled. With templet removed, and the tool fitted with a tap, the operation was completed.

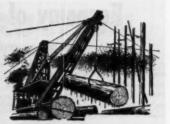
In actual time tests, Ganschinietz's three-man crew with one Impactool drilled and tapped the six holes for each cover in 20 min; with hand drill and tap they took 60. At \$7 per hr for the crew, that meant a saving of nearly \$4.70 on each cover, or a total of \$970 for the entire 208 pieces. Not bad for a tool weighing only 6½ lb.

For better service use the right rope



For rotary drilling,

PREformed, Internally Lubricated wire line designed to wind smoothly on drums and to withstand abrasion from running through blocks.



For logging operations, tough flexible ropes for tractor arch lines, chokers, skidders and loading.

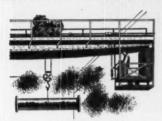


For shovels and draglines, ropes for different sizes and types of equipment designed to give best service for your particular needs.

The right rope for each job is available from



For shaft mining, shallow or deep, internally lubricated ropes to meet all load and speed requirements.



For cranes and hoists, small or large, PREformed Internally Lubricated wire ropes of the correct size and flexibility for each use.



For can conveyors, there are bright carbon steel, stainless steel and monel metal wire ropes to meet various service conditions.

A thousand and one
MACWHYTE
Internally Lubricated
WIRE ROPES

It pays to choose the right rope for your equipment

Besides the ropes listed above, Macwhyte makes many more such as cable tool drilling lines, elevator cables, incline or haulage ropes, scraper ropes, aircraft control cable assemblies, ropes for ship rigging and guying work, as well as hundreds of sizes and types of single-part, round-braided or flat-braided slings for material handling.

To get the best service, keep down maintenance costs, and save wire rope dollars, call your Macwhyte distributor or write direct to Macwhyte Company for recommendations. Catalog on request.

MACWHYTE WIRE ROPE

MACWHYTE COMPANY 2941 Fourteenth Avenue, Kenosha, Wisconsin Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mild depots carry stocks for immediate delivery. Mill Depots: New York - Pittaburgh - Chicago Minneapolis - Fort Worth - Portland - Seattle - San Francisco - Los Angeles

Economy of Wheel Tractor-Scraper Units

BY DAN K. HEIPLE, Chief Field Engineer, R. G. LeTourneau, Inc., Peoria, III.

 On page 94 of this issue we publish a summary of 16 reports released by the joint committee of Public Roads Administration and the Highway Research Board on operating efficiency of equipment engaged in highway grading, paving and surfacing. These reports are the result of time studies on 33 highway projects. Dan Heiple of R. G. LeTourneau, Inc., has analyzed the comparative reports concerning operation of scraper units hauled by crawler tractors and rubbertired tractors. We present his analysis herewith without bias. Manufacturers of any equipment mentioned in the reports are invited to submit comments on, or analyses of, the reports.—EDITOR

UNDER MANY TITLES—"Can Equipment Speed Combat Rising Earthmoving Costs," "Good Haul Roads Make Good Sense," "Does Push-Lo ad in g Pay Off", "Get Loaded — Get Going"—the story of contractors' experience with fast rubber-tired prime movers and scrapers has been told and retold. The story has been a manufacturer's story backed by field personnel time studies and contractors' records, but a manufacturer's story still.

It is especially interesting then to note report numbers 12 and 13 dated October, 1949 from the joint Highway Research Board and Public Roads Administration committee on Economics of Highway Construction and Maintenance Methods.

Both reports cover highway grading operations in Eastern and Southern States: No. 12 on crawlerdrawn scraper units, No. 13 on rubber-tired prime-mover and scraper units.

The average job summary for both types of units is shown in the accompanying table.

The data is composite, covering some 22,000 tractorscraper loads for crawlers and 9,200 loads for rubbertired units. Breakdowns cycle data in both cases was obtained by timing several thousand individual loads, yardage by load count against cross-section data. Crawler units had loading assistance in 60% of the loads, rubber-tired units 98%.

In presenting these facts, the committee states that: "No endeavor has been made to present selected data for purposes of enabling comparisons of performance to be made with other types or classes of equipment under identical operating conditions.

"Sufficient studies have not yet been made to warrant analyses of the individual effect upon scraper cycle elements and pay yardage per scraper load of such factors as individual size and type of unit, kind



Rubber tires speed up loading . . .



... save turning and maneuvering time on cut and fill ...



. . . and roll at high average speeds

AVERAGE JOB SUMMARY

ELEMENT	Round Trip Cycle for 8- to 19-Cu Yd Crawler-Drawn Scrapers	Round Trip Cycle 8- to 13-Cu Yd Rubber-Tired Prime Movers & Scrapers			
	AVERAGE	AVERAGE			
Loading-minutes	1.68	1.36			
Dump and turn at fill-min	0.75	0.56			
Turn in cut-min	0.42	0.31			
Total time constant-min	2.85	2.23			
Haul distance-ft	536	873			
Haul speed, loaded-ft/min	322	676			
Return speed, empty-ft/min	345	714			
Pay yardage per load-%					
struck capacity	79	84			

of material, grades, ground conditions, operator efficiency, etc.

"No studies have thus far been made for the purpose of comparing performance with and without pusher assistance under otherwise identical operating conditions."

Such impartial factual handling of the material presented is commendable on the part of the committee, but it is difficult if not impossible, to view a record of such volume without attempting to draw some conclusions or determine some trends from the viewpoint of the contractor and the manufacturer.

First of all, there is a notable discrepancy in average loading time against a commonly quoted and accepted standard of one minute. This would indicate either that sights are too high in shooting for a one-minute average or that operating efficiency of the loading cycle can be materially improved. The discussion of the various methods and possibilities for loading is a subject in itself and too lengthy to be included here.

Quicker Loading

In comparing the two types, however, there appears a saving of 0.32 of a minute in loading time for the rubber-tired machines which must be attributed to some factor or condition of operation. The slightly larger size of some crawler units could be one factor and the report does say that "In general, the smaller scrapers were observed to have a slightly smaller time constant...".

The difference between push-loading assistance in 60% of the cases with crawlers and 98% for rubber tires, however, could well account for a large portion of the 0.32-minute saving. If it is possible to tie such an increase to a 38% difference factor of push-loading, the economy of a pusher operation, regardless of size or type of unit, is above question. It is logical to assume that a high percentage of the difference is due to this one item.

Looking further into the total time constant shows an additional saving for rubber tires of 0.3 of a minute which, with load time saving, totals 0.62 of a minute.

The 0.3 of a minute extra speaks well for the speed and maneuverability of rubber-tired power and represents decreases in dumping time as well as turning on the fill and in the cut.

Average haul distances are not



Portland 20, Oregon

Box 7527



equal, but in both instances are well within the range of work normally considered best suited for crawler-type units. Although some effort has been made to define the minimum economic haul distance for rubber-tired scraper units at 1.000 to 1,200 ft and beyond, most contractors' experience has been that length of haul alone is hardly a determining factor for use of rubber tires. The record in this study would seem to bear out that experience. With an average haul of 536 ft, crawler types hauled at an average speed of 3.66 mph and returned at 3.82 mph empty. On a longer (873-ft average) but generally speaking comparable distance, and definitely short haul economic crawler range, rubbertired prime movers averaged 7.68 mph on the haul and 8.13 mph return. Seven and one-half to eight mi per hr are not exceptional speeds in themselves, but they do represent graphically the thinking behind "higher average speeds" on short hauls. The increase in this case being by the order of 100% or better. The average speed is more noticeable when you consider that it must include acceleration, deceleration and gear shifting. All of these are time consuming items and therefore indicate top speeds, even in this short cycle, that are considerably faster.

Higher Yardage

Pay yardage in the two studies averaged 79% of struck or water-level capacity for crawler units and 84% for rubber tires. Since scraper design is basically the same behind either tractive unit, the 5% increase can hardly be accounted for unless credited against lack of pusher assistance altogether or lack of adequate assistance for the crawlers.

The data was obtained separately for the two units with no thought of immediate comparison, nevertheless the magnitude of the information would definitely tend to cancel out some of the items of materials, grades, operator experience, and hauling conditions which affect machine performance. Then, the reports would indicate a trend to greater mobility and speed in earthmoving with rubber-tired prime mover and scraper equipment.

NEXT MONTH

Construction Methods and Equipment's Annual Maintenance Issue



Just off the press!

A <u>new</u> arc welding machine catalog — Welders for AC, DC, gas engine operation — capacities of 100 to 500 amperes.

Here, at last, is a helpful booklet that gives you complete data on all Airco arc welders — the machines with the stinger that penetrates. Divided into easy-to-read sections, you can quickly determine the welder suited to your production or maintenance job.

This booklet is handy, useful, bringing you a wealth of information covering design, distinctive features, specifications, power requirements, electrical characteristics, and outstanding operational qualities of each welder in the entire Airco line.

To give you some idea of the amount of material covered by this definitive booklet, here are a few of the many welders covered.

- "Bumblebee" and MCT Transformer AC Arc Welding Machines
- "Hornet" 36A and "Wasp" DC Arc Welding Machines
- · "Yellow Jacket" Gas-Engine Driven Arc Welders
- Customer-Assembled Gas Engine Sets

See this booklet yourself . . . send for it today. Just fill in the coupon below for your free copy.



AIR REDUCTION

Offices in Principal Cities

Air Reduction Sales Company - Air Reduction Magnolia Company - Air Reduction Pacific Company Divisions of Air Reduction Company, Incorporated

Headquarters for Oxygen, Acetylene and Other Gases...Carbide...Gas Cutting Machines
Gas Welding Apparatus and Supplies...Arc Welders, Electrodes and Accessories



6.	No. along street street about other period screet about parties comed screet before lower street laws you
	Air Reduction Sales Company A Dissilant of Air Reduction Company, Imporparated 60 East 42nd Street New York 17, N. Y.
	Please send me a copy of your NEW Arc Welding Machine Catalog No. 8.
	Name
	Firm
	Address
	City



Photo courtesy Corps of Engrs., Galveston, Texas District

You're looking at BELTON DAM TEST PIT #2 — Belton, Texas — where a MORETRENCH WELLPOINT SYSTEM operated so effectively that water was lowered to within 1 foot of the rock found at subgrade. Sandbagging took care of the rest. Test hole explorations went ahead "in the dry."

This was a difficult job because of adverse soil conditions. The contractor, Russ Mitchell, Inc., Houston, Texas, knew from past experience that he could count on MORETRENCH to handle the pumping perfectly.

Confidence like this is earned . . . a good thing to remember when you're in the market for wellpoints!

CATALOG ON REQUEST

MORETRENCH CORPORATION

90 West St.

4900 S. Austin Ave. Chicago 38, Illinois 7701 Interbay Blvd.

315 W. 25th St.

Rockaway

Cumberland gives you

ALL TO!

No.6. adhesion + Bond V

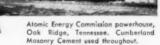
Adhesion and bond are vital qualities in masonry cement. Cumberland Masonry Cement not only exceeds government and A.S.T.M. specifications and excels in many special tests (see photo), but it also proves its superiority every day

with rugged on-the-job performance.

From any angle, Cumberland Masonry Cement with its pleasing light color is better cement. More and more architects, engineers and masons throughout the South are recognizing this fact every year.

The 10 basic requirements of high quality masonry cement

- 1. Plasticity
- 2. Body
- 3. Strength
- 4. Yield 5. Color
- 6. Adhesion & Bond
- 7. Negligible shrinkage
 - 8. Water retention
 - 9. Water repellency
 10. Non-efflorescing





Any quantity of Cumberland Masonry Cement will be shipped in mixed carloads with other types of Cumberland Cement

BODIES & HOISTS

32 YEARS OF KNOWING HOW!

Dealers, Fleet owners, Contractors, Highway and Street Departments who sell and use Perfection Bodies and Hoists know that we know how to build bodies that stand the gaff - Bodies that are engineered for the job - Hoists that will lift more than we say they will lift and do it longer and faster and steadier and more safely than any other units of the same rating. Our repeat order business is our biggest business.



Hoist. Write for complete information.

THE PERFECTION STEEL BODY CO. GALION, OHIO

THE MOST PRACTICAL

St. Louis Contractors **Combine Associations**



A. R. ELSPERMAN



ROBERT L. MURPHY



HENRY S. TILL JR.

A NEW GROUP, the Associated General Contractors of St. Louis, has been formed by the merger of the Master Builders' Assn. and the Municipal Contractors' Assn. First president is A. R. Elsperman of G. L. Tarlton Contracting Co., and Henry S. Till, Jr., is manager. Till succeeds R. L. Murphy (known as the dean of AGC chapter executives) who retired from both parent associations after a distinguished career in the construction field.



HE NEW

P&H

MODEL 955-A (21/2 YDS.)

with MAGNETORQUE* swing

Watch this new machine get its teeth into a rock job and see what "rock-rated" really means to you. It's designed ... every inch from boom point to crawler shoes ... to make rock handling easier ... more profitable for you.

Unbeatable - point for point

P&H Magnetorque eliminates swing friction clutches . . . their troubles and replacement costs. It gives you smoother, faster swings . . . for the life of your machine.

Greater Stability gives you more power at the tooth point . . . and greater work capacity.

Direct Acting Hydraulic Control . . . easier on machine, easier on operator . . . smoother and greater holding power through full wrap brakes and clutches.

*Trade-Mark of Harnischfeger Corporation for electro-magnetic type clutch.

P&H Rapid Reversing Planetary Chain Crowd gives you snappier dipper action. It's more accurate. And crowd chain outlasts 25 to 30 crowd cables.

Get the facts about P&H all-welded strength and Added Values! The 955A is a 2½ yd. version of the P&H 1055 (3 yd. shovel) . . . the machine that has set new low-cost production records everywhere. Write for Bulletin X122, today.



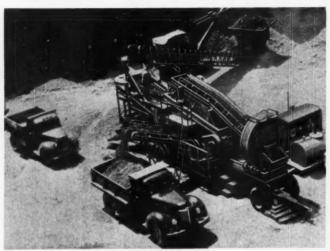
EXCAVATORS

4494 West National Ave. Milwaukee, Wisconsin

HARNISCHFEGER

CONSTRUCTION EQUIPMENT NEWS . . A Preview of

By MELVIN DEAN, Equipment Editor



TWINDUAL PORTABLE CRUSHER —Gravel - King portable plant features three stages of crushing with scalping screen feed. Pre-screening operation sizes and removes natural sand and gravel. Large boulders are scalped to the large-opening primary. Material requiring secondary reduction is bypassed to TwinDual roll

crusher for 2nd and 3rd-stage crushing. One-hundred-percent chips can be produced, or finished material from scalping screen blended with crushed material from the plant. Apron feeder is interchangeable with scalping screen for quarry rock.—Universal Engineering Corp., 327 8th St., N. W., Cedar Rapids, Iowa.

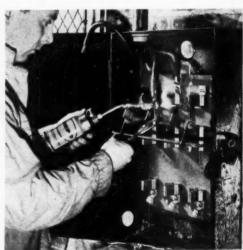


CONCRETE-HANDLING BUCKET Model CAC bucket has an air-operated clam gate that provides positive control and quick action in opening and closing. Rectangular openings prevent arching over discharge throat. Available in 2, 3, 4, and one- or two-compartment 8-yd. sizes.—Blaw-Knox Co., Blawnox, Pa.



SELF-PROPELLED ROAD-STRIPE MARKER-

Small, riding-type tractor is equipped for high-speed low-cost road marking. Paint is carried in tank attached at the rear, and is fed through a spray gun. Amount carried can be varied. The Beaver unit is geared to travel at speeds from 5 to 6 mph.—Beaver Tractor Co., Inc., Stratford, Conn.



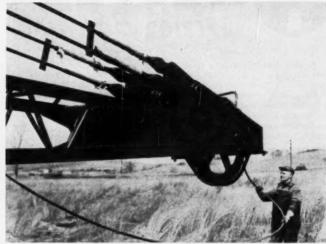
HAND TORCH USES A NEW TYPE OF FUEL-

Disposable container for hand torch contains a new self-pressurizing, self-vaporizing fuel. The Prepo torches light instantly, eliminating pouring, pumping, and priming. Two tips are available—one with long, broad flame; the other with a pinpoint flame.—Pressure Products Corp., 140 N. Dearborn St., Chicago 2, Ill.

New Machinery, Tools and Equipment That Will Help You on the Job



AUGER FOR CRAMPED AREAS—Scooter Model Hydrauger is recommended for cramped-area use. Both air and water are used for its operation. Up to 70 ft. of drill stem can be laid out ahead of machine. Scooter Model uses 13/16 in. hollow boring bars.—Hydrauger Corp., Ltd., 681 Market St., San Francisco, Calif.



LONG-LIFE CABLE ASSEMBLY—Boom support assembly effectively combats effects of severe vibration on power shovels, draglines, cranes, and similar equipment. The assembly involves a new thimble design embodying an interwoven eye and open-end pendant easily and quickly interchangeable on standard

equipment. Unit dampens vibration instead of concentrating it at one point. These supports are especially adaptable to installations where fatigue failures occur adjacent to sockets. Essential dimensions are the same as for standard open and closed sockets.—American Steel & Wire Co., Rockefeller Bldg., Cleveland, Ohio.



EARTH-FILL TAMPING RAMMER Self-contained rammer produces high compaction in cramped areas. Can be used on sand or granular soils, and will tamp about 10 to 24 yd. of soil per hr.—Barco Mfg. Co., 1812 Winnemae Ave., Chicago 40, Ill.



ROCKER-ARM-TYPE LOADER — Model 104 RockerShovel operates on rocker-arm principle and throws load overhead to discharge. Rated at 4 to 6 yd. per min., the 104 has a 10-to 15-sec operating cycle. Power is provided by a 48-hp. diesel engine

or a 30-hp. electric motor. Track gage is 44 in.; track shoe width, 13 in. The Type 104 has an automatic power cut-off at discharge to return bucket. Total weight is 22,000 lb.—The Eimco Corp., 634 S. 4th West St., Salt Lake City 8, Utah.



HELTZEL

SUPERIOR Batching Plants

· More efficient batching plants will effect savings for you in operation and plant costs. Heltzel's specialized engineers work out your specific problems on both stationary and portable installations, ranging in capacities from 30 to 500 tons. Why not let a Heltzel representative explain exclusive features and Heltzel's better construction.

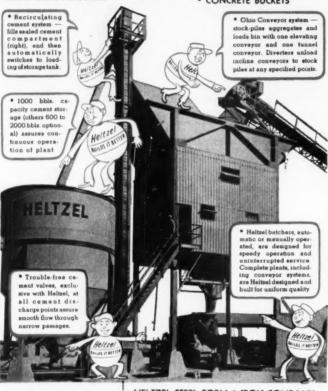
. CENTRAL MIX PLANTS

. TRANSIT MIX PLANTS

. BULK CEMENT PLANTS (Portable and Stationary)

AGGREGATE BATCHING (Portable and Stationary)

CONCRETE BUCKETS



WRITE FOR BULLETIN

HELTZEL STEEL FORM & IRON COMPANY WARREN, OHIO, U. S. A. Please send information regarding:

STATE _

Stationary Batching Plants Road and Airport Forms Portable Batching Plants Curb and Gutter Forms

ADDRESS -

CITY _

SIGNED

HELTZEL STEEL FORM & IRON CO. WARREN, OHIO . U. S. R.



FOUR - TON - CAPACITY HOISTS-Wright Safeway hand hoists are available in capacities from ½ to 4 tons. Features include high degree of safety, portability, light weight, and close headroom. Construction features include modern gear drive, Weston-type brake, steel load chain, and self-lubrication. - American Chain & Cable Co., Inc., Wright Hoist Division, York, Pa.

FORGED MANHOLE STEPS-Forged-aluminum manhole steps and ladder rungs are recommended for both interior and exterior use. Available in three sizes according to the projection required, they are adaptable to concrete, brick, or concreteblock wall construction. Alcoa aluminum alloy 61S-T6 has been specified for high corrosion resistance and maximum strength.-Aluminum Co. of America, 801 Gulf Bldg., Pittsburgh 19. Pa.



JEEP-MOUNTED DRILL - Lightweight drill (Model B35) augers holes with 3- to 12-in. dia. It is supplied complete with all equipment for adaptation to a Jeep, truck, or tractor power take-off. Among rec-ommended uses are: Soil testing, augering post holes, locating bridge foundations, drilling shallow wells, drilling borrow pits, and locating mineral beds. In vertical position, with 4½-in. tool, it will auger to depths of 100 ft without the use of water. A mobile turntable converts the B35 to a horizontal drill. Feed is hydraulic .- Mobile Drilling, Inc., 960 N. Pennsylvania St., Indianapolis 4, Ind.

MACK MODEL LR ... 15-TON DUMP TRUCK

Keeps the Shovels HUSTLING



...Payloads Moving

Feature by feature—in every part—Mack Model
 LR is engineered to keep earth, rock, coal and ore moving away from the shovel—fast.

Regardless of weather or terrain, Model LR maintains positive traction through slippery mud or over uneven ground because of Mack's exclusive Power Divider differential. Power steering, air-assisted clutch, offset driver's position, proper weight distribution—all contribute to easy handling ... assure nimble maneuverability ... fast, profitable hauling.

Study the standout features Model LR brings to your job. Compare them, point by point, with any other make of truck for off-highway dump work. You'll find they all add up to give you increased profits through faster time cycles and greater output at lower cost.

Be Profit-Wise

MODERNIZE WITH

Mack Trucks, Inc., Empire State Building, New York 1, New York, Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



AMPLE HORSEPOWER: Standard engine, 196 h.p.; other engines from 150 h.p. to 306 h.p. Available in either gasoline, diesel or butane types.

MACK POWER DIVIDER: Assures good going through mud and over uneven ground by effectively transferring power to the wheel having the best traction.

MACK DUPLEX TRANSMISSION: Eight forward speeds provide a ratio range to meet the requirements of every off-highway hauling condition.

AIR-ASSISTED DOUBLE PLATE CLUTCH: Makes possible almost effortless operation; reduces driver fatigue to a minimum.

MACK PLANIDRIVE REAR AXLE: Threepinion planetary final reduction gears located outboard of each wheel, provide large reduction without excessive size of carrier, differential or axle shafts.

POWER STEERING: Hydraulic power steering is shock-proof, positive and fast — gives easy, effortless control.

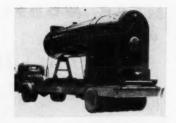
MASTERFUL AIR BRAKES: Air-actuated brakes have nearly 1000 square inches of braking area properly distributed, front and rear, to assure fast, positive and effective braking on all four wheels.

RUBBER SUSPENSION: Mack rubber Shock Insulators on front springs and rear axle support-arms eliminate twisting strains, absorb vibration, require no lubrication or adjustment, and last indefinitely.



REAR DUMP HAULING UNIT— Features of Model E-9 Tournarocker include: Heaped capacity of 9 tons or 10 yd; 11x7-ft opening; low body; and low center of gravity because load is carried down between the

wheels. Power is provided by a Model D Roadster Tournapull prime mover. Positive power electric steering by Tournatorque motor plus a 90-deg. left and right turning radius make the Tournarocker highly maneuverable. It can turn around in a 14 ft. 5-in. radius. Forward speeds range to 25.27 mph. Specifications include: Over-all length, 24 ft 71/4 in.; over-all width, 8 ft 41/4 in.; height 10 ft 434 in.; maximum dumping angle, 85 deg.; and total weight, 23, 320 lb. Unit is mounted on 18.00x25 tapered-bead tires. Prime mover is interchangeable with E-9 Carryall scraper.—R. G. LeTourneau, Inc., Peoria, Ill.



BOILER FOR ASPHALT PLANTS -Portable 104-hp. boiler, designed for working pressures up to 150 psi... is especially recommended for use in conjunction with asphalt plants. The Lucey 104 features a 1.040-sq.ft. heating surface, a 160-ft furnace volume, steam volume of 54 ft, and an oversize seamless firebox. The boiler is adaptable for oil, gas, or stoker firing, and may be skid-mounted for portability. The 30-in.dia. stack is 28 ft. long. Additional sections are optional. The unit measures 22 ft 6 in. x 62 in. x 7 ft 6 in., and weighs 18,000 lb.-Lucey Boiler & Mfg. Corp., 1516 Chestnut St., Chattanooga, Tenn.

DIESEL-ENGINE CRANKCASE OIL—Improved crankcase oil for diesel and gasoline engines combats formation of sludge and engine deposits under severe operating conditions. Advantages claimed are: Prevents ring sticking, valve and rockerarm deposits, and excessive liner wear when high-sulphur fuels are used; prevents cold engine sludge in stop-and-go operations; and prevents rust and moisture, corrosion in engines that are idle or in storage.—D-A Lubricant Co., Inc., Indianapolis, Ind.



REDUCED-WEIGHT TRUCK MIX-ERS-Loadlimit Smith-Mobiles haul full-rated truck-mixer payloads while meeting highway load limitations imposed by most states. Reduced weight is accomplished through elimination of parts and assemblies which are not basic or necessary to mixer operation. Loadlimit model can be quickly changed to a standard truck mixer or agitator; or, a standard model can easily be converted to a Loadlimit model. The new machines are available in 2, 3, 41/2, and 51/2-yd. sizes.— The T. L. Smith Co., 2851 N. 32nd St., Milwaukee 10, Wis.



A lot of different things get called a "drum," but not on a present-day concrete mixer or paver.

Because contractors, architects and engineers must know instantly and without guessing what a drum will hold and properly mix, they demand and get exact uniform capacities, certified by AGC Rating Plates.



The AGC Rating Plate is your protection. Always look for it on any mixer or paver when you buy.

Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

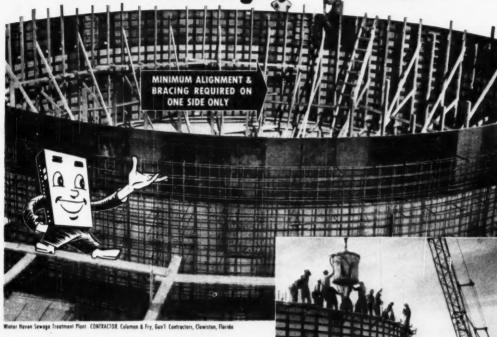


Waterloo, Iowa THE FOOTE CO., INC. Nunda, N. Y. THE JAEGER MACHINE CO.
Columbus, Ohio
THE KNICKERBOCKER CO.
JACKSON, Mich.
KOEHRING COMPANY
WORTHINGTON PUMP

KWIK.MIX COMPANY
Port Washington, Wis.
THE T. L. SMITH COMPANY
Milwaukee, Wis.
WORTHINGTON PUMP & MACHINERY CORP.

Page 126 - CONSTRUCTION Methods and Equipment - June 1950

UNI-FORMS cut material costs 1/2 ...labor savings ___ 35%!



UNI-FORMS . . . the concrete form system . . . for all types of concrete forming . . . ready to go to work when they reach your job . . . permanent equipment . . . insure substantial material and labor savings . . . on large or small jobs . . . years of extra profitable service to you.

Send us a set of plans today. Let us show you the UNI-FORM way to extra profits.

Tuscon Sewage Treatment Plans. M. M. Sundt Construction Co., Tuscon, Asszona

HERE'S PROOFIllustrating Material and Labor Costs for forming 40,000 sq. feet of contact area in Circular Wall Construction.

	UNI-FORMS	CONVENTIONAL FORMS	
Forms	3.2¢ per sq. ft.	8.0c per sq. ft.	
Alignment and Bracing Lumber	.75c per sq. ft.	2.53c per sq. ft.	Sa
Ties	1.68c per sq. ft.	1.09c per sq. ft.	Γ
Lohar	15¢ per so ft	23¢ ner sn ft	Se

SAVINGS with UNI-FORMS

5.99¢ per sq. ft.

Total Material Saving \$2396.00

8c per sq. ft. Total Labor Saving \$3200.00

*Based on 25 uses (() on approx. cost of \$1.60 per sq. ft. with 50% solvage.
**Based on 5 uses (() on approx. cost of \$.50 per sq. ft. with 20% solvage.

RENTED...SOLD...OR RENTED WITH A PURCHASE OPTION



UNIVERSAL
Form Clamp Company

1238 N MOSTNER

CHICAGO 51, ILL

What Is Long Haul Dirt?

7he BIG Makes Crawler



THE matched combination of an International TD-24 tractor and Bucyrus-Erie B-170 or B-250 scraper greatly extends the profitable limits of crawler tractor hauling. The BIG RED team loads more dirt, hauls it faster, dumps it more quickly, and returns on a shorter time cycle than any other crawler tractor-scraper combination.

It outperforms rubber-tired outfits, too, on much longer hauls than has generally been accepted. It works more days per year, stays on the job under conditions that stop rubber-tired equipment—bad weather, wet and slippery haul roads, wet fills. It cuts costs over rubber-tired units because

See Your INTERNATIONAL

RED 7eam Hauling Pay

Matched for Championship Dirt Moving



it eliminates the cost of supplementary power for loading and dumping, does away with the cost of maintaining haul roads. Its greater yardage, bigger percentage of total working time, and greater economy more than compensate for the added speed of so-called "long haul" equipment.

The BIG RED team, matched for championship dirt moving, revolutionizes the conception of crawler tractor-scraper possibilities for low cost dirt. Let us prove it to you!

BUCYRUS-ERIE COMPANY, South Milwaukee, Wisconsin

Industrial Tractor Distributor



ILLUSTRATED:

• Lauson's new bantam beauty —
Model LMH. Weighs only 22 lbs.!
1 HP. Other sizes to 6 HP. All
Lauson engines are 4-cycle, aircooled!



• Insist on Lauson

— the engine that's
first in quality!

Here are just a few of the superior construction features which make Lauson the Long-Life engine: Connecting rods have replaceable crank-pin bearing liners.

- Precision ball bearings on both ends of crankshaft.
- Fly-ball governor running in oil.
- Automotive-type float feed carburetor.
- Lauson original design provides direct stream of cool air over both valves simultaneously.
- Always choose Lauson engines — a better buy because they're better built!

The LAUSON Company
Bept, CM, New Molstein, Wisconsin
A Division of Wart Carter Company
In Canada: Hart-Emerson Ltd., Winnipeg, Canada



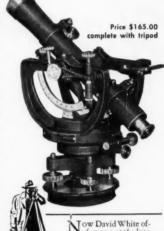
RE-STYLED TRACTOR SHOVEL— Improved Model HF payloader tractor shovel has a rated capacity of 34 yd. Improvements include: Greater engine horsepower, greater built-in tractor effort, more digging power, faster speed range (up to 19.5 mph) and increased stability and balance. Boom side-guards are included as standard equipment.—The Frank G. Hough Co., 706A Sunnyside Ave., Libertyville. III.

PUSH-BUTTON-CONTROL HOISTS
—Material elevators can be rendered fully automatic by the 800 Series electric hoists. One, or a number, of push-button stations can be used to operate the hoists. The 800 Series contains models in five sizes with ratings from 2 to 10 hp and capacities from 600 to 3,000 lb. Hoisting speed is 100 fpm, single-line pull. Double sheave blocks top and bottom, and four lines, quadruple this capacity. All models are equipped with 220/440-v 3-phase 60-cycle ac motors. Other motors are available.
—King Mfg. Corp., 3146 W. Chicago Ave., Chicago 22, III.



HOPPER-CAR UNLOADER—Belttype unloader conveys stone, sand, and gravel from hopper cars on to a portable belt conveyor for stockpiling or transfer to trucks. Adjustable gate at forward end of chute controls height of flow. Rubber strip along each side prevents material from leaking into the chain or other wearing parts. Pneumatic tires or steel wheels are available, as are assoline or electric power units.— Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.

Avoid costly errors with this . . . NEW UNIVERSAL Level Transit



N ow David White offers you, at the lowest price anywhere, the finest of Universal Leve Transits with 4½" protected arc, internal focus-

ing and coated optics.

Don't wait if you're in the market for a new all-round practical builder's instrument — see the improved new David White Model 3000 Universal

Level Transit now.

You'll find this instrument properly used will be your best insurance against costly layout and building errors. The new 4½" protected arc means easier, more accurate readings, less likelihood of instrument damage through accident. Internal focusing assures you of dust and dirt-free inside lens surfaces, better protection for optical parts and mechanism. Coated optics mean clearer, distortion-free images, sharper definition, positive readings at greater distances and under adverse conditions. Instrument spindle supported on ball bearings for perfect horizontal adjustments.

Ask your nearest dealer to give you complete information on this and other fine engineering instruments. Or write direct to David White Co., 343 W. Court St., Milwaukee, Wis.

We offer complete, prompt repair service on all makes of instruments levels, transits, theodolites, etc.



NEW and Heavy-Duty Engineered

TO SAVE YOU MONEY



Whether you haul by the yard or by the ton

You get lower-cost performance, more miles of troublefree hauling, and longer life from every new International Truck because every new International Truck is HEAVY-DUTY ENGINEERED.

Proof of this statement boils down to this:

- Heavy-duty truck buyers keep records of hauling costs right down to the last penny. On the basis of what these records show, these cost-conscious men have bought more heavy-duty International Trucks than any other make for 18 straight years.
- 2. The extra values that for almost two decades have assured America's most exacting truck buyers performance at lower cost per mile are engineered into every new International Truck from the smallest to the largest.

Every new International Truck from 4,200 to 90,000 pounds gross vehicle weight offers heavy-duty engineered stamina and operating economy combined with new comfort and ease of handling.

You get new comfort and driving ease in the "roomiest cab on the road." Step into the Comfo-Vision Cab

and discover how much more "move-around room" there is in the "roomiest cab on the road." Note how easy it is to adjust the wide seat to just the right position.

Look out through the one-piece, scientifically curved Sweepsight windshield. Place your hands right where they feel natural for driving—and you'll find them gripped around the sturdy steering wheel. And just wait till you start going—you'll enjoy more positive control...thanks to new Super-steering.

You get more all-'round truck value in every new International Truck. See the new valve-in-head truck engines, new rear axles, new features throughout—all proved under actual operating conditions. Get the facts about new Internationals—the world's most complete line of trucks.

See for yourself ... see your International Truck Dealer or Branch, soon.

International Harvester Builds McCormick Form Equipment and Formall
Tractors...Motor Trucks...Industrial Power...Retrigerators and Freezes
Tune in James Melton and "Harvest of Shara"—NBC, Sunday after



ALL NEW, ALL PROVED

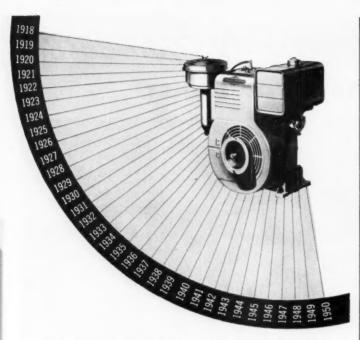
INTERNATIONAL



TRUCKS

NTERNATIONAL HARVESTER COMPANY CHICAGO

June 1950 - CONSTRUCTION Methods and Equipment - Page 131



32 Years of "Air-Cooled" Power

EXPERIENCE

in Building More than 41/2 Million Engines

Briggs & Stratton engines have, by far, more air-cooled power experience built into them than any other singlecylinder, 4-cycle, air-cooled engines.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wis., U. S. A.

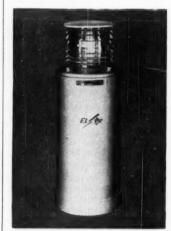


In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.



ROTARY MASONRY DRILL-Carbide-tipped rotary drill bit features two spiral flutes for removing dust, and to provide maximum body strength for the drill. Advantages claimed for the Cyclo-Twist drills are: No cleaning of hole, no stalling or slowing down of drilling, removal of dust as it is drilled insures uniform drilling rate, and lower temperatures result in carbide staying sharper longer. These drills are offered in sizes from 3/16 to 1 in. -New England Carbide Tool Co., Inc., 60 Brookline St., Cambridge 39, Mass.

ALUMINUM-FOIL ROOFING—Lightweight roofing material utilizes aluminum foil between cotton gum base layers and a finish coating of marble or granite chips of selected color. Aluma-Life roof has been passed by the National Board of Fire Underwriters with an A rating and is FHA approved (title 2 loan). Economy in installation is achieved by the elimination of all metal flashing on chimneys and valleys. It can be used on pitches of 5 on 12 and up.—Aluminum Building Products, Inc., Route 1, Atlantic Blvd., Jacksonville, Fla.



PORTABLE ROAD BEACON—Short duration flashes are produced at a rate of 70 per min by a new, portable road beacon. The beacon consists of a special gas-discharge lamp, simplified pulse-producing unit, four 1.5-v dry-cell batteries, and lens. Lens drum of pressed glass protects lamp and provides increased light in horizontal direction. Beacon stands 22 in. tall, has an 8-in. dia, and weighs 29 lb.—International Standard Trading Corp., 67 Broad St., New York 4, N. Y.

88-H...99-H... MASTER 99



Every Pound of Weight is on a Wheel that

DRIVES and STEERS

That's why these husky graders, with their full hydraulic control, just naturally . . .

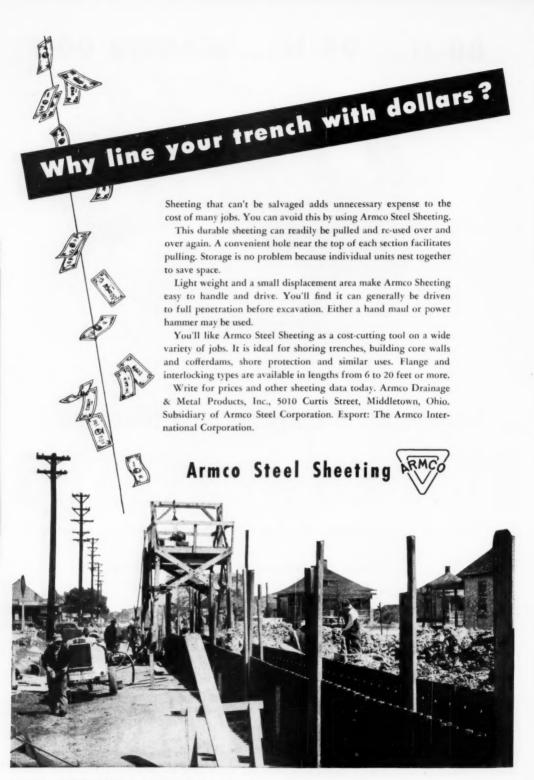
Go Places where ordinary graders cannot go.

Do Things ordinary graders cannot do.

Outperform ordinary graders on every job.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.





TRUCK-MOUNTED LOADER-

One-man-operated truck - mounted loader has a volume capacity of 1/2 vd; a weight capacity of 1,500 lb. Operated from the truck cab, the Holmes-Owen loader can be used for light digging, grading, scoopingup, loading, hauling, and unloading. It has a double-jointed design to give each movement the flexibility of elbow action. Power is provided by four independently operated hydraulic cylinders. When not in use, loader does not interfere with regular use of the truck .- Ernest Holmes Co., 2505 E. 43rd, Chattanooga, Tenn.



HEAVY-DUTY STAPLING HAM-MER-Asphalt shingles and similar roofing materials are quickly stapled in place with the Model H-4 heavyduty automatic stapling hammer. This one-hand-held device drives staples having a 1/2-in. crown and %-in. legs. The legs are designed to diverge inside the work, putting them under tension and increasing their holding power so that they won't vibrate out. Hammer operates at arm's length, so that operator is able to cover a large area from one position. One blow of the hammer drives the staple all the way home. Weight is 2 lb. 4 oz. with full load of 50 staples.—Bostitch, Mechanic St., Westerly, R. I.

DIESELS WITH HIGHER RATINGS

-Increased horsepower and improved performance are features of the new 4-cylinder International "9" Series of diesel power units and automotive engines. As a power unit, the UD-9A delivers 62.5 hp at 1,600 rpm under intermittent load. Weight is 2,060 lb. As an automotive unit, the UD-9A operates at governed speed of 1,800 rpm, delivering 70 hp at that speed. Weight is 1,500 lb. Both units have an inbuilt gasoline-conversion all-weather starting system and full-pressure lubrication of moving parts.-International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.



General and Export Offices - Galion, Ohio, USA Cable address GALIONIRON, Galion, Ohio



Model K7-1, 1½ H.P. 4-cycle, single cylinder, air-cooled. Length 13°, width 14°, height 17°, Weight 38 lbs.

POWER FOR:

Concrete Mixers Gravel Graders Road Oilers

Conveyors

Compressors

Pumps

Chain Saws

Drifts

And other uses.

Four-Cycle, Air-Cooled

KOHLER ENGINES

Compact • Quick-Starting Reliable

Kohler Engines are designed, engineered and built to give the same dependable, economical service that has won worldwide acceptance for Kohler Electric Plants in construction and other industries. Made in several sizes, they are suited to a wide range of uses. Kohler engineers will gladly assist in working out applications for your particular requirements. Write for information. Dept. 15-W, Kohler Co., Kohler, Wisconsin. Established 1873.

TOR-Roll-O-Hoist handles 1/4 yd. of concrete at a hoisting speed of 110 fpm. It is powered by an electric, reversible winch mounted on the frame base. A gasoline-powered model is also available. Remote control mechanism enables operator to control motor switch and positiveacting mechanical brake from any position on the hoist. Limit stops prevent platform from over-traveling. Cam-operated safety device secures elevator to upright frame in event of cable breakage. Over-all tower heights to 62 ft., or above, may be had by adding 10-ft. interchangeable extensions. Offered as standard equipment is either sideunload or wheel-through platform for unloading directly through the hoist structure. Tip-over buckets of 3- and 7-ft. capacities are furnished as accessories for concrete handling, Roll-O-Hoists are available in four models .- St. Anthony Machine Products Co., 2424 E. Franklin Ave., Minneapolis 6, Minn.

PORTABLE MATERIALS ELEVA-



SIDE-DUMP TRUCK BODY - Hydraulic dumping and fully automatic down-folding side gate are features of the new Easton side-dump truck body. Operation of gate is controlled by leverage system with door-operating mechanism completely closed for protection against falling stones. Gate opens flush with floor as body is raised; closes automatically as body is lowered. When open, gate provides a chute that carries load clear of tires. Three-sleeve telescopic hydraulic jacks, one at each end of body, are used for dumping. The Model BD-1116H (shown in illustration) has a capacity of 16 tons. The same design is available in larger capacities.-Easton Car & Construction Co., Easton, Pa.

WOOD-PILING EXTRACTOR—Designed to adjust to any size or shape, the Downs pile puller can be used for extracting wood piling, poles, or posts. Inner surface of puller consists of a series of heavy knife edges for biting into the pile transversely to the grain of wood, providing a positive hold for pulling pilings that are hard to grip due to creosote coating, marine growth, grease, or odd shapes. Large handles aid workmen in setting puller in place.—Downs Crane & Hoist Co., 540 W. Vernon Ave., Los Angeles, Calif.

KOHLER OF KOHLER

PLUMBING FIXTURES . HEATING EQUIPMENT . ELECTRIC PLANTS . AIR-COOLED ENGINES



The Most Flexible Black Top Paver

THE machine that is going to make possible the handling of the widest range of contracts is the one that is going to mean the most profit for you.

The flexibility of the Adnun Black Top Paver can't be equalled by any other piece of similar equipment. Your Adnun will lay any asphalt mix —hot or cold. It will spread stone, cinders or slag. It will lay soil cement. It has laid widths up to 13 ft. or it can spread narrow strips down to 6 ft.

In combination with the block-off sections of the hopper and the fine adjustment on the cutter bar, the Adnun will build out shoulders and "feather" the material into the existing crown without destroying the contour of the road.

This is a combination of advantages no other Black Top Paver can give you. They equip you to handle more work and a greater variety of work. Let our Sales Agent give you more details.

on the market!



Look at this picture. Feathering a new shoulder into the crown. Adnun is the only machine that can do this.



Rubber Tired Stone Attachment makes a real stone spreader of the Adnun.

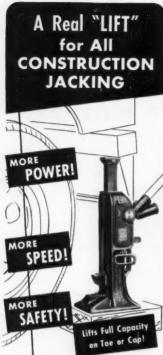


Subsidiary of Blaw-Knox Co.

1910 State Street, Nunda, N. Y.

BLACK TOP PAYER





SIMPLEX Ratchet Lowering JACKS

Don't let poor jacking slow you up on the job! Choose a Simplex Ratchet Lowering lack for faster, safer action on all lifting, lowering, pushing or pulling jobs. Depend on Simplex for rugged construction that means lasting service...for safe jacking power to help you get the work done with speed and efficiency.

CHECK THESE FEATURES!



- Load raised or lowered notch by notch — Jack cannot be tripped.

 New adjustable mecha-
- New adjustable mechanism cadmium plated springs.
- Shorter fulcrum centers
 easier operation.

There's a complete line of Simplex Ratchet Lowering Jacks to meet every construction Jacking need; capacities from 1½ to 35 tons. All models safety tested to 100% over rated load—all lift full capacity on cap or fee

Other Simplex Jacks for construction work include SCREW JACKS, HYDRAU-LIC JACKS and JENNYS, PUSH and PULL JACKS, SHORING JACKS, TRENCH and TIMBER BRACES.

Send for General Catalog

Simplex Jacks

> 1008 S. Central Avenue Chicago 44, Illinois

SMALL OVERSHOT LOADER-Recent addition to line of Overshot loaders is the Model 4-C for mounting on utility-size tractors including the Caterpillar D-4, Allis-Chalmers HD-5, and International TD-9. The loader has a rated capacity of 1 yd and a 20-sec loading cycle. Overshot action eliminates swinging and blocking. The Model 4-C is made in two heights for surface operation and for tunneling. Standard machine has an over-all height of 15 ft 3 in. with bucket raised, and a dumping clearance of 8 ft. Underground unit has an over-all height of 12 ft with bucket raised, and a dumping clearance of 6 ft. Loader can handle bankrun material at rate of 125 yd per 50-min hr, with no increase in fuel consumption over normal bulldozing operations.-John Austin, Inc., Denver. Colo.



LIGHT. MEDIUM-DUTY TRUCKS -Line of light- and medium-duty trucks is available in 10 models with gross vehicle weights to 21,500 lb. Tractor-trailer units are available in weights to 42,000 lb. Wheelbase lengths in the Style Liner series range from 126 to 250-in. Cab-toaxle dimensions are 601/2 to 1741/2 in. Cab seats are 59 in. wide. Mechanical improvements include wider-track front axle and shorter wheelbases for shorter turning radius and front and rear springs have been lengthened. Axles of varying capacities and ratios in singlespeed, two-speed, and two-speed double-reduction final drive are available. A choice of four engines provides ratings to 126 hp.-Federal Motor Truck Co., Detroit 9, Mich.

ALL-PURPOSE GREASE FITTING

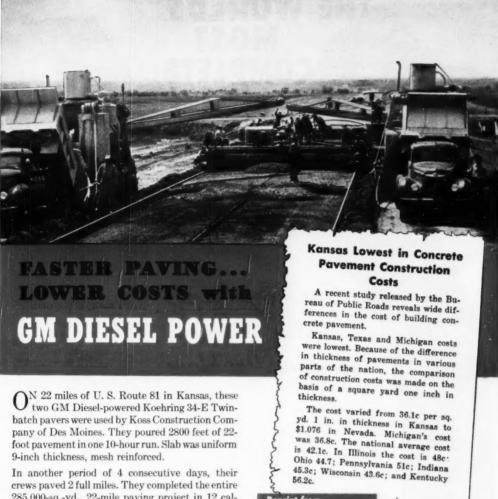
-Ball-in-top design of new grease fitting prevents dirt and grit from blocking throat. Tempered-wire spring is coiled so that it cannot be compressed to restrict flow of heaviest lubricant; or, forced out of body under working pressures. Threaded end of fitting is peened so spring and ball are locked securely in place. Spherical contour of fitting head provides tight metal-to-metal seal by any hydraulic coupler. The Kleenseal Bullneck unit permits standardization on one type of fitting for all requirements.-Lincoln Engineering Co., 5702-42a Natural Bridge Ave., St. Louis 20, Mo.





AST 1414 ST. . NEW YORK 54 N

Phones: MElrose 5-7704-5-6



285,000-sq.-yd., 22-mile paving project in 12 calendar weeks.

Records show these crews consistently poured 1000 batches per 10-hour day—a tribute to the men, the equipment and the power.

Because General Motors Diesels are 2-cycle engines, they deliver power at every piston downstroke. So the power flow is smoother and acceleration is faster under load. The engines are more

compact, easier and more economical to maintain.

No matter what kind of work you do, if you want sturdy, dependable, money-making power, it will pay you to specify General Motors Series 71 Diesel engines for new equipment or for repowering old.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES ... Up to 275 H. P. DETROIT 28, MICHIGAN MULTIPLE UNITS . . . Up to 800 H. 9

GENERAL MOTORS

ESEL BRAWN WITHOUT





problems. We can furnish you with any size of self-priming centrifugal pump ranging in capacity from 3/4 inch, 1000 GPH to the big 10 inch. pumping 240,000 GPH.

Gorman-Rupp Pumps are GUAR-ANTEED in plain language by us and our distributors. They will pump more dirty water, more hours with less gasoline, will prime quicker and at higher suction lifts than any other self-priming pump. Write us about your pumping problems - ask for a copy of our guarantee.

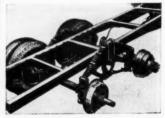
New Contractors' Pump Bulletin 8-CP-11 furnished on request.





TRUCK CONVERSION KIT-Engine-driven low-mount Tipster converts pick-up trucks into dumping units. Main elements are: Clutchtype hydraulic pump, steel understructure for mounting under the pick-up body, and twin-cylinder hydraulic hoist rams. The Hydra-Clutch pump is operated by a dashboard-mounted control. Shipped as an entire unit, the Tipster accessory weighs approximately 400 lb.-Hercules Steel Products Corp., Galion,

TANDEM-AXLE TRAILER-Heavyduty tandem-axle low-bed trailer has a 40-ton rated capacity. Available with flat or drop-type platform, the new trailer is fitted with eight 20ply 10:00x15 tires. These tires are rated at 50,960-lb capacity under the new 20-mph ratings issued by the Tire & Rim Assn. Gross load is distributed with 37,440 lb on king pin and 50,960 lb on rear axles. Total trailer weight is 11,200 lb. Walking beam supporting rear axles gives maximum horizontal and vertical oscillation of each wheel (about 10 in, both ways.)-La Crosse Trailer Corp., La Crosse, Wis.



TRAILING AXLES FOR TRUCKS-Doubled load capacity on 11/2- to 5ton trucks is possible through use of the Little Giant trailing axles. Designed for use with 2-axle trucks, these units are installed as a third axle and wheels directly behind the rear, driving axle. Installation of the Model B and C (12,000- and 15,-000-lb capacity) axles permit an axle spacing of either 44 or 49 in. Rubber bushings at torque-arm ends eliminate four grease points for simplified maintenance.-Little Giant Products, Inc., Peoria, Ill.

A complete line of Engine Powered and Electric Motor Driven, Self-Priming and Non Self-Priming Centrifugal Pumpa

CONTRACTORS' PUMPS

MINING PUMPS

INDUSTRIAL PUMPS

TRASH-TYPE PUMPS

PETROLEUM PUMPS

IRRIGATION PUMPS

HEATER FOR ASPHALT TANKS-

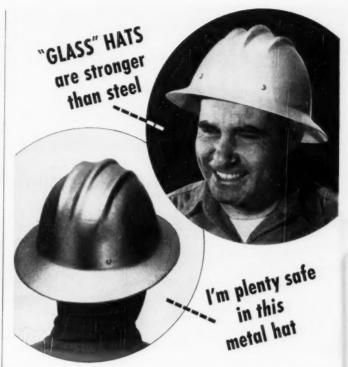
Light-duty heater for tanks or tank cars of asphalt is designed for those who do not ordinarily heat and apply more than 10,000 gal of asphalt per day. The Model 50 Rapid Fire heater is not equipped with steam generator for thawing cold asphalt (Equipment for thawing car or tank by circulating hot oil through steam coils is available as extra equipment.) A 10,000-gal car can be heated about 25 deg per hour with the heat-transfer oil, or 35 to 40 deg per hour by direct circulation of asphalt through the heater, once the asphalt is fluid.— W. E. Grace Mfg. Co., 6100 S. Lamar St., Dallas, Tex.



HEAVY-DUTY RIPPER - Attachment is designed for use with Allis-Chalmers HD-5G Tracto-Shovels or any HD-5 tractor equipped with hydraulically controlled bulldozer with front-mounted pump. This new ripper works to a maximum depth of 15 in. The complete Shaw unit is composed of ripper frame, four shanks and ripper points, hydraulic cylinder, all necessary hose and fittings, and attachment bolts. Frame is built to take up to seven ripper shanks with shank holes spaced on 12-in. centers. Ripper shanks are 1%-in. thick, 3-in. wide, and 24-in. long. Points can be removed for resharpening or replacement. Settings are made by hydraulic lever control from operator's seat.-Shaw Sales & Service Co., 5100 Anaheim Telegraph Road, Los Angeles 22, Calif.

DIESEL-POWERED GENERATORS

-Sixty-cycle diesel-powered generators are available with 40-, 50-, 60-, 75-, 100-, 125-, 200-, and 250-kw ratings. Similar units are available for 50-cycle operation at a slight derating in kw capacity. These generators are designed for continuousservice applications where they are primary sources of power. Optional equipment includes: Automatic overspeed shutdown control; automatic high-temperature and low lubricating-oil-pressure shutdown, complete marine or radiator-type cooling systems; hydraulic governor; watercooled exhaust manifold; and generator-mounted package control unit. -Cummins Engine Co., Inc., Columbus. Ind.



Glass or Metal...

HARD BOILED* HAT protection can't be beat

Now you can get the famous Bullard shock-absorbing safety hat design in either molded Fiberglas or special alloy aluminum. Unique ribbed crown is the safest ever built. Greatest protection; light weight; easiest to wear on any job.

"Glass" Hard Boiled Hats are available in solid molded colors and white—even a glow-in-the-dark model; passes all tests for electrical shock resistance; impact resistance; is water-and flame-resistant.

Aluminum Hard Boiled Hats are handsomely finished in satin-like natural metal. Passes standard drop tests; safe to wear where electrical shock is no hazard. Keep your men better dressed; safer, cooler and more comfortable with Hard Boiled Hats.



Write for circular and prices

E. D. BULLARD COMPANY 275 Eighth St., San Francisco 3, Calif.

*Trade Mark
Registered IN S.A.

DISTRIBUTORS IN PRINCIPAL CITIES
FIRST IN HEAD PROTECTION

STANDARD ENGINEER'S REPORT

LUBRICANT RPM. Delo Oil

UNITS 148 Diesel engines

Heavy-duty service
conditions 24-hour operation

PERIOD 13/2 months

JOB L. a. airport Extension

Engine-cleaning oil cuts "down time" in half!

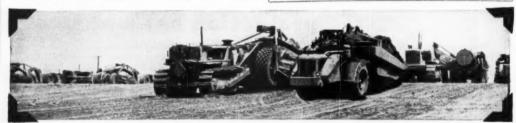


LUBRICATED WITH RPM DELO OILS, more than 100 heavy-duty engines like these were pushed to full capacity around the clock. They finished the greatest earthmoving project in the West 150 days ahead of schedule! RPM DELO Supercharged Oil kept parts lacquer-free and reduced wear so that time out for repairs was reduced 50% under that necessary when using ordinary heavy-duty oils.

How RPM DELO Oils reduce wear, corrosion, oxidation in Tractor, Truck, and other Heavy-Duty Engines



- A. Contains special additives that provide metal-adhesion qualities . . . keep oil on parts whether hot or cold, running or idle.
- B. Anti-oxidant resists deterioration of oil and formation of lacquer . . . prevents ring-sticking. Detergent keeps parts clean . . . helps prevent scuffing of metal.
- Special compounds stop corrosion of any bearing metal and foaming in crankcase.



HEAVY-DUTY DIESEL AND GASOLINE EQUIPMENT, owned by 8 contractors, moved over 12,000,000 cubic yards of earth on this cut and fill job—an extension to the Los Angeles Airport—in 13½ months! General Contractors are N. M. Ball & Sons, Berkeley; Harms Bros.,

REMARKS: RPM DELO Oils are designed to meet every heavy-duty engine need: RPM DELO Heavy Duty, RPM DELO Special, RPM DELO Super-charged-1 and RPM DELO Super-charged-2 Lubricating Oil.



Sacramento; H. Earl Parker, Inc., Marysville; Subcontractors, Lewis & Queen, Fresno; Louis Biasotti & Son, Stockton; Baker Bros., Chico; Gunner Corp., Pasadena; and Far West Construction Co. All used Standard Oil Company of California products 100%.

FOR MORE INFORMATION about the proper grade of the new RPM DELO Oils to fit your particular requirements, or the complete line of RPM Lubricants, and the name of your nearest "RFM" Distributor, write or call any of the companies listed below.

Trademark "RPM DELO" Reg. U. S. Pat. Off.

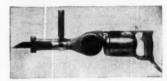
STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Barber, N.J., Chicago, New Orleans

STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado



IMPROVED DUMPCRETE - Jobtested Dumpcrete improvements include: Swinging baffle inside body has been increased in over-all height and relocated to improve discharge action: gate wings are built higher with longer slope to permit faster, easier unloading; and sides of hopper section chute have been increased to eliminate concrete overflow. Swingaway-type chute has been added to the 4-yd body. For driver convenience, strap steps are provided on front and rear running boards, and gate discharge handles are more easily accessible.--Maxon Construction Co., Dumpcrete Div., 131 N. Ludlow St., Dayton 2, Ohio.

ONE-YARD EXCAVATOR - Aircontrolled excavator and material handler has a 1-yd capacity. The Model 420 features air control of all major motions including swinging, hoisting, steering, boom-hoist (up and down), swing brake, shovel crowd and retract, and shovel dipper trip. Independent travel and independent boom-hoist are featured as standard equipment on the 420. Machinery is placed on the deck so that good balance is obtained and the need for a large amount of counterweight is eliminated. The Model 420 is offered as a shovel, dragline, clamshell, lifting crane, hoe, piledriver, magnet crane, and other service. A choice of diesel or gasoline power is given.—General Excavator Co., Marion, Ohio.



RECIPROCATING GUN-TYPE SAW—Portable saw can be used to cut through any materials from rubber to stainless steel. Of the reciprocating gun type, stroke is adjustable to a full 2 in. Special guides for various blade widths eliminate whipping or snapping. These guides are also used as sights in following a line. The Transa gun swivels 360 deg, and locks in any cutting tangent. Power can be furnished by electric drill, air drill, or through a flexible shaft.—The National Machine Tool & Supply Co., 13 N. 1st St., Minneapolis, Minn.



• Here's another typical money-saving fastening triumph for DRIVE-IT-fastening seat brackets at the Grand Rapids Speedrome.

Wherever steel or wood must be fastened to concrete, steel or other hard materials there's a spot for DRIVE-IT to save you money. Reports of 75% to 85% savings over old-fashioned methods are common. With Drive-It, a drive-pin plus a power charge does the job in a split-second—and better than the old "dig and drill" method.

We can't begin to tell you the whole story here, but do yourself a favor and send us the coupon below. It will be money in your pocket!





An attachment for handling 8 inch diameter standard testing sieves provides uniform and exceptionally rapid results on sand samples.

GILSON Mechanical Testing Screen

Assures Accurate Fast Control

 The accurate proportioning of coarse and fine aggregates, both in field and laboratory testing, is essential to all types of modern construction.

The accuracy of your mixes and the accuracy of your production can be definitely controlled on the job with the GILSON Testing Screen.

Make certain of your control—specify a GILSON Testing Screen for fast, accurate sizing of coarse and fines from 4" to 200 mesh. It handles samples up to one cubic foot.

GILSON SCREEN CO. MERCER, PENNA.

CONCRETE CARTS EASY to WHEEL-EASY to DUMP

Perfectly Balanced!



No. 2-PR Sterling Cart with dumping rockers and 4.00 \times 18 pneumatic tires.

Just the cart you need for hauling concrete or other materials. Takes a full batch from small mixers without danger of spilling, 6 cubic foot capacity, water full. Sterling quality construction. Tray made of 14 gauge steel with continuous ½" diameter butt-welded rod to reinforce top edge. 1½" T-iron rockers facilitate dumping. Roller bearings standard equipment. Choice of 30" dia. steel wheels or pneumatics. Write for Sterling Cart Catalog No. 62.





HIGH-LIFT HYDRAULIC LOADER
—Dumping height of 13 ft 6 in. (to
lowest point on bucket) is feature
of the Model 100, Type GL DempsterDiggster. This Diggster has a crowd
reach of 10 ft 6 in., and will dig
through an 18-ft bank. The Dempster-Diggsters operate with hydraulic crowd-and-hoist action, and are
available with crawler-type traction.
—Dempster Bros., Inc., Knoxville,
Tenn

TRACTOR-DRIVE GENERATORS— Emergency electricity in standard voltages can be obtained by a new line of Tractor-Drive generators. Belt-driven, they are available in 3,000-, 5,000-, and 10,000-w capacities, with 115/230-v 60-cycle current. Control box permits regulating generator speed to produce correct voltage. Circuit breaker guards against overloads.—D. W. Onan & Sons, Inc., Royalston Ave., Minneapolis 5, Minn.



BACK-RIP SCARIFIERS — Teeth mounted on back side of bulldozer moldboard rip ground when tractor backs up. The Back-Rip scarifiers float on top of ground as tractor moves forward. Uses for the teeth include: Rip and loosen packed soil, black top, and hard ground; rake out rocks and roots, making forward blading easier and faster; and eliminate deadhead time. Set consists of four curved-shank, capped, locked-on replaceable teeth mounted in housing welded to back of moldboard. Teeth can be raised and pinned out of way when not in use.—Preco, Inc., 6300 E. Slauson Ave., Los Angeles 22, Calif.

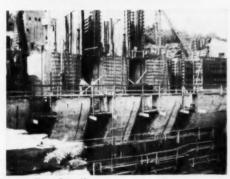




WINSLOW FILTERS Better by a Dam Site!









Hungry Horse Dam, Montana Grenada Dam, Mississippi Merriman Dam, New York

Rondout Reservoir, New York Hungry Horse Dam, Montana Neversink Dam, New York

Throughout the United States—in Montana, New York, Mississippi, Wyoming, Delaware, Oregon and other states—you will find Winslow Filters on a high percentage of the heavy equipment used in the construction of gigantic dams and reservoirs. There must be some good reasons for this, and here they are: First, substantial savings in costs of maintenance and operation; and second, the ability of machinery-wise Winslow engineers to specify the right size, type and quantity of filters for each job. *Your* equipment deserves this same superior protection which so many outstanding contractors demand. Write for details.

PHOTOS COURTESY U.S. BUREAU OF RECLAMATION



WOYSTOW FUTERS

Winslow Engineering Company

4069 Hollis Street · Oakland 8, California

SAVE HOURS ON

CONDUIT AND PIPE

INSTALLATIONS



...with a GREENLEE PIPE BENDER

Cut costs, speed your jobs this efficient, easy, economical way. Make "on the job" bends in pipe and rigid conduit up to $4\frac{1}{2}$ ", thin-wall conduit and tubing with a GREENLEE Hydraulic Bender. One man operated for fast, accurate, uniform bending. Simple to operate, easy to set up and shift from job to job. Not only saves labor, but

eliminates cost of many manufactured bends and fittings. Often pays for itself on first few jobs. Write today for free folder No. E-201.



Other GREENLEE timesaving tools for industry: Nand Benders for Tubing • Hydraulic Pipe Pushers Knockout Tools • Auger Bits and Drills • Spiral Screw Drivers • Chisels and Gouges • And many others. Greenlee Tool Co., 2186 Columbia Ave., Rockford, Ill.



PRECISION PLOTTING TABLE-

Rapid plotting and measuring of points on plane surfaces in terms of rectangular coordinates are simplified by this precision plotting table. Standard units have a 4x6-ft working surface and are based on decimal-inch measurements. Other table sizes, as well as metric division, can be supplied in special designs. The X and Y carriages are positioned to nearest inch by notches spaced to an accuracy of better than 0.0002 in. Even-inch notches are subdivided by short lead screws which provide only 1 in. of travel. Lead screws thus have a negligible accumulated error. Large-scale movements are made by disengaging latch. Intermediate adjustments to 0.001 in, are made by two hand cranks.-The Fairchild Camera & Instrument Corp., West Coast Division, 53 W. Union St., Pasadena 1, Calif.

LIFT GATE FOR PICK-UP TRUCKS
—Hydraulically powered lift gate attaches to any ½- or ¾-ton pick-up
truck. Operated by two hydraulic
hoist cylinders, it will lift loads
weighing as much as 800 lb. A
single lever controls all operations.
The platform automatically stops
at ground level. The pick-up Lift
Gate weighs 324 lb complete.—
Anthony Co., Streator, III.



WATER-SPRINKLER TANKS—Gravity and pressure-type sprinkler tanks are recommended for soil stabilization, dust control, weed control, and other water-hauling requirements. The Littleford tanks can be skid-, truck-, or 4-wheel-trailer mounted, and are available in capacities from 800 to 1,500 gal. Large manholes simplify filling. Spray bars are designed so that they are easily removed. The bars can be provided with shifting and end-folding features.—Littleford Bros., Inc., 415a E. Pearl St., Cincinnati 2, Ohio.

McKIERNAN-TERRY Wide-Range Line of PILE HAMMERS and EXTRACTORS



Now made in complete, standardized line of ten double-acting hammers, five singleacting hammers and two double-acting extractors. Write for free descriptive Bulletins.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION

Manufacturing Engineers
14 PARK ROW, NEW YORK 7, N. Y.



HEATING KETTLES FOR ASPHALT AND TAR

Fire Proof — Oll Burning Hand and Motor Driven Spray

Other Products

CONCRETE VIBRATORS

Gasoline Engine and

Electric Motor Driven Models

FRONT END SHOVELS

AGGREGATE DRYERS

ASPHALT PLANTS

Portable — Stationary

Write for Circulars

White Mig. Co.

ELKHART

INDIANA

Build New Life into old roads with American Welded Wire Fabric

The large composite picture shows how existing reads can be widened and strengthened by resurfacing with concrute, rainfacted from shoulder to shoulder with American Welded Wire Fabric. The small shortnes show how Welded Wire Fabric prevents progressive damage by helding cracks rightly closed.

Provide Perspensed (a) Classed Crack

Reinforced Perspensed (b) Classed Crack

When your old roads prove unable to handle the increased weight and volume of today's traffic, you often can restore them to full service without incurring the excessive cost of replacing the entire road. Many highway engineers have modernized their old roads by surfacing them with concrete reinforced with American Welded Wire Fabric.

Using the old pavement as a foundation, they have built wider roadways to accommodate a greater number of vehicles. The reinforced concrete slabs are stronger — readily withstand the incessant pounding of heavy loads. A new reinforced concrete surface provides better visibility and insures greater safety than other types of resurfacing.

In resurfaced concrete roadways, the many small, closely spaced steel members of American Welded Wire Fabric fortify all parts of the slab against stresses and strains in all directions. The rate of cracking is sharply reduced and such cracks as do occur are held tightly closed, preventing progressive damage to the pavement.

When you are planning to build new life into old roads, our technical staff will be glad to supply complete data on specific designs and standard styles of U·S·S American Welded Wire Fabric that are available. Write to our nearest sales office today, you incur no obligation.

AMERICAN STEEL & WIRE COMPANY GENERAL OFFICES: CLEVELAND, OHIO COLUMBIA STEEL COMPANY, SAN FRANCISCO PACIFIC COAST DISTRIBUTORS TEMPESSEE COAL, IRON & RAILROAD COMPANY BIRMINGHAM, SOUTHERN DISTRIBUTORS UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Every concrete paving job needs



AMERICAN WELDED WIRE FABRIC

reinforcement

UNITED STATES STEEL





THIS TRADEMARK ON YOUR ROADBUILDING EQUIPMENT

MEANS . . .

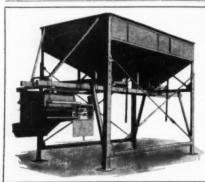
- 1. YOU ARE SAVING MONEY
- 2. YOUR RESULTS ARE BETTER
- 3. YOUR BIDS ARE STRONGER

We welcome the invitation to prove these statements!

USE APSCO: BASE PAVERS • ROAD WIDENERS • TRENCH ROLLERS • WIDENING CHIPPERS and OTHER EQUIPMENT

See your nearest APSCO dealer or write the factory for folder.

LL PURPOSE SPREADER CO. Elyria, Ohi



Winslow BINANBATCH —Reduces Your Job Cost Use with a

10S-11S-14S-16S Mixer

Complete—with scale for two or three aggregates. With two or three overhead storage

For use on culvert—bridge—curbing—foundation jobs.

Wherever above size mixers are in

operation.

Prompt Delivery — Write or Wire

Mftd. by

WINSLOW SCALE CO. TERRE HAUTE, IND.

Distributors Located throughout U. S.

MULTIPLE-PURPOSE HOSE—Features of the Vari-Purpose hose include: specially compounded tube resists many reactions of various materials; braided duPont Cordura rayon carcass; maximum resistance to working pressures; and oil and abrasive-resistant long-lasting cover. Because of its wide applications, the Vari-Purpose hose will result in reduced inventories.—Carlyle Rubber Co., 64 Park Place, New York 7, N. Y.



PORTABLE LP GAS TORCH—Instant-lighting hand torch features use of replaceable cartridge refills. The torch lights instantly without preheating; gives a clean, hot flame of 3,660-deg F; and weighs 2½ lb. The Bernz LP torch will burn in any position, including upside down. It operates most efficiently on propane fuel.—Otto Bernz Co., Inc., 280 Lyell Ave., Rochester 6, N. Y.

SAW PUMP OPERATES DRY-Factory-sealed water pump on Model HD wet-or-dry masonry saw eliminates the necessity for disconnecting pump when cutting dry. To switch from wet to dry cutting, the operator turns a pet cock on the outlet of the pump. Company reports the pump cannot be damaged by dry cutting. No maintenance is necessary as a factory-exchange plan is set up to handle any difficulty. The Clipper saw handles all masonry materials from 12-in, concrete block to 1-in. quarry tile.—Clipper Mfg. Co., Dept. CME, 2809 Warwick Trafky, Kansas City 8, Mo.

VERTICAL CENTRIFUGAL PUMP
—Hydro-Line pump serves where
net positive suction head or installation space is limited. It consists
essentially of a vertical close-coupled
rotative-shaft turbine pump enclosed
in a steel jacket or barrel. Capacities
up to 5,000 gpm are obtained with
this pump; maximum head is 1,500
ft. All types of drives are available.
—Peerless Pump Div., Food Machinery & Chemical Corp., 301 W. Ave.
26, Los Angeles 31, Calif.

Here's a 15,000 GPH Pump you can carry in one hand! Engine and pump together weigh only 57 pounds Self-priming, non-clogging, centrifugal 3-inch inlet and pump discharge Special McCulloch 5-hp gasoline engine with anti-friction bearings throughout Built-in fuel tank; three-way valve for Cast-iron auxiliary impeller and tank replaceable if required wear plate Suction lifts up to Automatic 28 feet self-lubricated shaft seal Special base for good footing Automatic pressure-controlled in hard or governor maintains correct soft ground speed during self priming Entire unit lubricated and at all loads

McCULLOCH MODEL 15M PUMP SEA LEVEL PERFORMANCE TABLE

automatically by engine fuel Automatic rewind starter

BUILT TO THE SAME HIGH STANDARDS AS McCULLOCH CHAIN SAWS

	TAL				ııc	Ti	ON	1						10	Ft.		OF Ft.			VE WAT	ER 25 Ft.
20	ft.													250	GPM						
25	ft.													245		210	GP	M .	170	GPM	
30	ft.													235		205			165		130 GPM
40	ft.													215		190			160		125
50	ft.					1.								185		145			145		120
40	ft.													135		130			125		105
70	ft.													45		65			65		60
N	AT	IC	1	ıv	VI	D	E	S	A	L	E	S	A	ND	SEI	RVICE					

McCULLOCH MOTORS

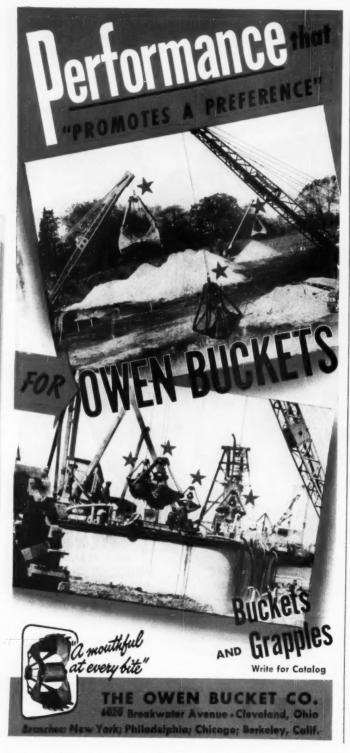
Los Angeles 45, California

Export Department: 301 Clay St., San Francisco 11, California, U.S.A.

EN	10	60	II D	ON	TO	DA	v

McCULLOCH MOTORS CORP. Dept. MC Los Angeles 45, California

Please send me complete details on the McCulloch Model 15M Pump.



SOIL-SAMPLING KIT-Hand-operated soil-sampling kit contains equipment for obtaining accurate, dependable subsurface information. The twelve soil- and earth-sampling tools included can be used to obtain samples to depths to 25 ft in practically all soil and earth formations. The tools are enclosed in a steel case which can be carried in any automobile. Standard items include: Probe for simple exploration; chopping bit and Iwan post-hole auger for starting holes; closed auger; Jamaica auger and ship auger for sticky, cohesive materials; splittube sampler and Chicago thin-wall tube for obtaining undisturbed samples; sample jars; and necessary drill rods and fittings .- Acker Drill Co., Inc., 725 W. Lackawanna Ave., Scranton, Pa.



LIGHTWEIGHT POWER SAW—Three-inch-capacity saw rips, crosscuts, and angle-cuts rough or finished lumber. Weighing 12 lb, either right- or left-hand blade is available. Bevel-depth attachment permits straight cuts from 11/16 to 231/32 in., and up to 45-deg bevel cuts from ¼ to 1% in. Attachments are available for grooving mortar joints, cutting plastics and metal, and for mortising, cutting, or scoring compositions, tile, stone, and concrete. Both 115- and 230-volt ac/dc models are available.—Mall Tool Co., Power Tool Div., 7730a S. Chicago Ave., Chicago 19, III.

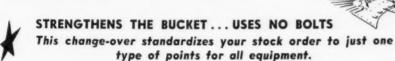
WHEEL-MOUNTED LOADER-Safety for the operator is the principal feature of the Trojan Loadster. The reverse-curve bucket arms are designed to prevent the operator's arms, hands, or head from becoming entangled under anv operating conditions. The Model LM-75 has a lifting capacity of 4,200 lb, and a maximum dumping clearance of 8 ft. Powered by a 40-hp gasoline engine, it has a maximum forward speed of 15 mph. Available accessories include: Draw bar, bulldozer, fork, crane hook, and V or one-way snow plow.-Contractors Machinery Co., Inc., Clinton St., Batavia, N. Y.

Jiffy.



For All Types Of

TRENCHING MACHINES



COMPLETE SERVICE ON ALL TRENCHER BUCKETS, ADAPTERS and POINTS.

THE CHEAPEST AND BEST CHANGE-OVER ON THE MARKET.



CHANGE your equipment to JIFFY SELF-SHARPENING REVERSIBLE POINTS. WELD-ON POCKET \$1.50. JIFFY POINT 50c FOB—Dallas, Texas



Genuine "JIFFY" Points for PROFIT and EVERETT TRENCHERS

50¢

STOCK ON HAND . . . SEE YOUR DEALER or WRITE US.

Jiffy Products Company

3611 Parry Avenue . . . Dallas, Texas



NEW EQUIPMENT BRIEFS

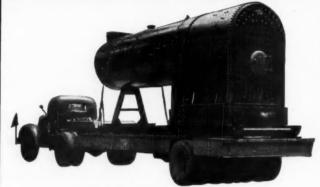
Spray gun has controllable nozzle producing pattern from size of a silver dollar to a swath 12 in. wide. Maker: Eclipse Air Brush Co., Newark 7, N. J.

Portable fuel can delivers fuel by pre-pumped air pressure without lifting or funneling. Fillmaster can (Fillmaster Co., Toledo, Ohio) is equipped with hand-operated squeeze nozzle and safety valve.

Super-rated V-belts incorporate a chemically produced fiber of high strength, low stretch, and excellent shock-absorbing qualities. The Goodyear Hy-T belt features include minimum stretch, resistance to shrinking, water and mildew resistance, and increased horsepower rating.

Power-actuated tool features new automatic firing-pin action, where speed and force of forward motion are not important. Spring-loaded safety arm in handle has to be rotated 180 deg, and held, before cartridge can be fired. Maker: Mine Safety Appliances Co., Pittsburgh, Pa.

NEED STEAM?



LUCEY 104 H.P. 150 and 250 lb. W.P. Skid mounted with 24" oil burning base.

LUCEY Inside Seal-Weld Double Calked BOILERS

- 1. 1040 sq. ft. heating surface.
- 2. 160 cu. ft. furnace volume.
- 3. Ample steam volume 54 cubic feet.
- 4. Oversize seamless firebox.
- 5. Butt straps calked and seal welded inside.
- 6. Four-inch water space around firebox.
- Boilers available from 40 to 150 H.P. Working Pressures from 125 to 350 lbs.

Write for descriptive literature.



LUCEY BOILER MANUFACTURING CORPORATION

Chattanooga, Tenn.

SMOKE STACKS

BREECHINGS FLY ASH REMOVAL UNITS
ASME UNFIRED PRESSURE VESSELS

Mobile transmitter-receiver is designed for adjacent channel operation in urban and metropolitan areas. Said to improve performance in the crowded radio-frequency spectrum, it consists of a 10-w transmitter, receiver, and power supply in one cabinet. Maker: General Electric Co., Syracuse, N. Y.

Gear-type tube bender features full 180-deg bends and positioning at any point on the tubing without disassembly. The benders (Imperial Brass Mfg. Co., Chicago 7, Ill.) are designed for use with copper, brass, aluminum, or steel tubing in sizes from ½ to 1½ in. outside dia.

Paint-bonding process treats iron and steel preparatory to painting. Poly-Kote (Kelite Products, Inc., Los Angeles 54, Calif.) forms a dense smooth film of low porosity and high plasticity which cannot absorb paint excessively. Material is non-toxic and non-inflammable.

Pentachlorophenol is available in a 1:10 concentrate as a permanent, non-discoloring, and paintable wood preserver and termite repellent. Produced by: Monsanto Chemical Co.

Expanded diesel-engine line now includes five 4-cyl models and six 6-cyl models ranging in output from 90 to 200 hp. Refinements in design of these engines are said to provide more power, greater economy and dependability, and longer life, Maker: Murphy Diesel Co., Milwaukee 14, Wis.

Self-dispensing rope coil container keeps rope clean at all times and serves as a handy storage unit for unused portions of the coil. The rope is pre-measured and marked in red at 10-ft. intervals. Maker: New Bedford Cordage Co., New Bedford, Mass

Magnetic sweeper retrieves ferrous materials on a magnetic tube which rotates through a full 360 deg. Material collects over the entire circumference to a thickness of about ¼ in. Available in sizes ranging from 12 to 36 in. Maker: Eriez Mfg. Co., Erie, Pa.

Steam turbine, Model TE-5, delivers 5 hp. at 2,000 to 3,600 rpm. A larger model, TE-15, is rated 15 hp at 3,600 rpm. The Little Giant turbines may be mounted vertically or horizontally. Maker: Moon Mfg. Co., Chicago 6, Ill.

Power feed attachment permits using radial-arm saws for straight rip sawing, bevel ripping, molding, power-feed shaping, ploughing, grooving, and rabbeting. The De-Walt attachment can be moved completely out of the way once power feed work has been completed.







JACKSON PAVING UNIT

It consists of a manually guided, electric vibratory paving machine and portable power plant and will place upward of 65 cu. yds. of stiff mix concrete per hour; will undercut at side forms and curbs; strike off to crown (both regular and inverted;) roll back for second passes. Works right up to and around sewers, manholes and other obstructions. Quickly adaptable to any slab width from 6' up to any practical width. Has strong tendency to propel itself. Operators work from front, side or rear. Power Plant generates both single and 3-phase 60 cycle AC and may also be used for lights and operating other contractor's tools. Write for complete details.*

AND FOR THE FASTEST, handiest means of thoroughly compacting granular soils, investigate

THE JACKSON VIBRATORY

This machine can be used to tremendous advantage in compacting granular backfill under factory floors, in trenches, bridge approaches, close to bridge abutments, alongside foundations, under footings, ramps, sidewalks, municipal pavements, loading docks; in compacting such granular soil as is used in earth fill dam construction and many other places. Delivers up to 4500 1/2-ton vibratory blows per minute. Propels itself at 6' to 8' per min. One man can guide two units side by side. The Jackson M-I Power Plant will operate two of these machines simultaneously. Complete details on request.*

OTHER MONEY-MAKING VIBRATORY EQUIPMENT

for vibrating full slab widths of highway and airport paving; Side Form vibrators for attachment to finishers and spreaders; mass and general construction vibrators ideally suited to each type of job.

*FOR SALE OR RENT at Jackson Distributors.

Write for the handy JACKSON "POCKET GUIDE" describing the complete line.

ELECTRIC TAMPER AND EQUIPMENT CO. . LUDINGTON, MICH.

Pocket telescope (fountain-pen size) has a 6-power magnification. The Penscope is a precision instrument having a field of view of 315 ft at 1,000 yd. Maker: Pan-technics, Ltd., Encinitas, Calif.

Electric blasting caps are protected by plastic shunt. By covering bare ends of leg wire, the shunt minimizes possible corrosion due to atmospheric conditions. Maker: Olin Industries, Inc., East Alton, Ill.

Electric-hydraulic door opener handles heavy doors with a feather-like touch. The Pittcomatic is essentially a double-acting automatic power hinge. Micro-switch is actuated when the door handle is touched. Maker: Pittsburgh Plate Glass Co., Pittsburgh 22, Pa.

Headrest goggle for welders is easily adjustable to any head size. Designed to be worn over eyes or personal glasses, the goggles have well-ventilated indirect side shields to keep out sparks, metal splashes, and stray light rays. Maker: American Optical Co., Southbridge, Mass.

Corrosion and oxidation-resistant coating can be used on concrete, wood, or fiber surfaces. End-O-Rust (End-O-Rust, Inc., Cleveland, Ohio) has a high, hard gloss finish, impervious to abrasion, weathering, and hard wear.

Waterproofing masonry paint. (Formula 369) utilizes capillary action to draw material into voids in masonry. The manufacturer, Arid-Crete Corp. of Cincinnati, states the formula has withstood pressures up to 160 psi.

Viennese-made arc welder has a 60 to 375-amp rating. Model RFN features stepless, loss-free regulation of welding current over the entire current range. Available from: American "Elin" Corp., New York 5, N. Y.

Diesel nozzle tester is a universal tool for servicing all makes of injection nozzles. Connection is by connector tube and interchangeable nuts. Maker: Bacharach Industrial Instrument Co., Pittsburgh 8, Pa.

Primer for corroded iron and steel serves circumstances where complete rust removal is not possible. Tuf-On-Rust dries in 4 hours for recoating, and can be applied by brush or spray. Maker: Brooklyn Varnish Mfg. Co., Inc., Brooklyn I, N. Y.

Silicone product is used for keeping water out of concrete and cinder blocks, porous stucco, and sandlime brick. Stopall Type C and CP (Stopall Waterproofing Manufacturers, Inc., Kalamazoo, Mich.) permits oil painting on concrete. Coverage is up to 150 ft. per gal.





You, too, can get bonus mileage . . .

● In the last eight years, the more than 600 fleet units of the Olson Transportation Company have travelled more than 360 million miles. From this vast operation comes a clue to a saving that you can make. You'll find it in this statement by John A. Ebeling, Olson vice president:

"STANOLUBE HD Motor Oil has demonstrated in our fleet how it can cut repair costs and keep fleet units on the job longer between overhauls. Since its introduction into our fleet in 1942, piston-ring and bearing life has increased about 12%. Motor-overhaul periods have been extended 15,000 miles."

For you, too, STANOLUBE HD Motor Oil will put extra miles between overhauls by keeping your engines clean, free from corrosion, and protected against wear. Yours,



too, are the advantages offered by a specially trained and experienced Standard Oil Automotive Engineer. His head-quarters are the nearest Standard Oil (Indiana) office. Phone him there, or write to: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA)



New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest devlopments in construction equipment and materials available for your use

HYDRAULIC CYLINDERS—New Ledeen catalogs are available describing the use and construction of pneumatic and hydraulic-actuating cylinders. Bulletin CS 248 describes the use of these cylinders for removal of mold cores from fresh concrete pipe during production; Bulletin 500 lists dimensions and weights, ratings, and limitations of the Ledeen medium, heavy, and super-duty lines.—Ledeen Mfg. Co., 1600 S. San Pedro St., Los Angeles 15, Calif.

ELECTRIC SUMP PUMPS — Allbronze electric sump pumps for pit depths to 3 ft are described in Leaflet 3250. This bulletin covers hourly drainage capacities, construction, displacement-type control, power unit, and dimensions of the Drain-Dri line.—Yeomans Bros. Co., 1445a N. Dayton St., Chicago 22, III.

HARD-SURFACING-Two bulletins now available describe repair of construction equipment by welding. One discusses Seaco ac/dc hard-surfacing electrodes for protecting parts subject to severe impact and abrasion. Uses listed include repair of crusher parts, shovel teeth and lips, bulldozer blades, tractor grousers, clamshell bucket lips, and pumpshells and impellers. The other bulletin describes rebuilding and repairing worn buckets with Manganal, a special - analysis manganese - nickel steel. Other applications for Manganal include repair of crusher parts, hammermill hammers, tractor sprockets and pads, shovel and dragline bucket teeth, chutes, truck bottoms, and conveyor-chain wear strips .- Stulz-Sickles Co., 134 Lafayette St., Newark 5, N. J.

BRAKE LININGS; CLUTCH FAC-INGS—Friction materials for shovels, draglines, cranes, tractors, and other industrial equipment are described in Catalog I-102 (100 pp). The bulletin illustrates friction-material locations on typical units; lists friction material size data; equipment manufacturer's part numbers; type of brake band with which the units are equipped; and Grey-Rock friction material recommendations for specific parts of various units.—Grey-Rock Div., Raybestos-Manhattan, Inc., Manheim, Pa.



- For joining grader, trencher, ditcher and other earth moving conveyor belts.
 - For belts 3/8" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.

 Strong, durable . . . strain is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO

4699 Lexington St., Chicago 44, III.



An increasingly popular general purpose trailer which affords a large capacity in an 8 ft. deck width, legal in all states.

Eight tires on two longitudinal rocking stub axles to provide desired oscillation.

Level deck or drop deck in 15, 20, 25, 30 and 35 ton capacities. Large diameter tires and power detachable gooseneck in capacities from 25 to 65 tons in 8 ft. width, 75 tons capacity in 10 ft. width. Write for catalog for details.



HOSE SELECTION GUIDE—Handbook contains information on the selection, installation, and servicing of oil and gasoline hose. Data are furnished on principal types of hose used for various types of applications.—New York Belting & Packing Co., 1 Market St., Passaic, N. J.

RYERSON CATALOGS — Eightpage bulletin describing specialized steel service for contractors features Hi-Bond reinforcing bars. Other products listed include electricwelded wire fabric, steel forms for concrete joist construction, steel spirals for reinforcement, expanded metal, reinforcing accessories, caisson rings, and others. Also available, is a 4-p bulletin on two high-performance alloy steels supplied in heat-treated condition and ready to use. Rycrome and Nikrome M are suitable for heavy-duty axles and shafts, gears and pinions, studs and bolts, and similar application. Data tables include minimum mechanical properties, test results, properties at high temperatures, and machinability ratings.—Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, III.

ASPHALT PLANTS—Complete line of White asphalt plants is described

in Circular 39. This circular describes portable pavement repair trucks with capacities to 10 tons per hr; moderate-size asphalt paving plants with capacities to 30 tons per hr; large models equipped with vibrating separation screens, multicompartment hot-storage bins, dust collectors, and either volumetric control or weigh scales. Also described are separate units of aggregate dryers and pug-mill mixers.—White Mfg. Co., Elkhart, Ind.

MECHANIZED ACCOUNTING FOR CONTRACTORS—Booklet describes economical mechanized accounting methods for seven-figure problems. Designed especially for contractors and builders, the booklet shows how error free bid preparation could be achieved. An advantage of the Printing Calculator is that it provides a tape indication of the mathematical functions performed and the figures used. The machine can be used to prepare payrolls, figure volumes and areas, provide data for compensation and governmental reports, and check invoices.-Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

SURVEYING EQUIPMENT—Pocket-size folder describes a complete line of surveying instruments. Items listed include precision steel tapes, pocket tapes, frame tapes, oilgaging tapes, plumb bobs, tape hooks, tape wipers, special tapes, transits and leveling instruments, targets and plumb bobs, and draftsmen's tools.—The L. S. Starrett Co., Athol, Mass.

LIQUID SHOCK ABSORBERS—One-page data sheet contains information on the Heyden liquid shock absorbers and excess-pressure climinators. The sheet lists several features, describes various applications, and lists specifications for the four models in which these units are available.—R-S Products Corp., 4530 Germantown Ave., Philadelphia 44, Pa.

FORM CLAMPS AND TIES-Revised specifications for form clamps and ties for architectural concrete are available in printed form. These set forth amount of disconnection recommended for exposed or non-exposed surfaces; types of spacers; new type of aligners and anchors; and waler supports and their value in holding forms to alignment. The specifications list recommended factor of safety for ties over the actual estimated pressure because of severe and unexpected conditions of impact and vibration, as well as unusual head of concrete over average rate of fill.-Williams Form Engineering Corp., 1501 Madison Ave., S. E. Grand Rapids 7, Mich.



Standard Steel Works, North Kansas City, Mo.

Maintenance Distributors, Tor Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construc-



Sharp Turns? Embankments?

Use Safety-Beam Guard Rail

At sharp turns, embankments, bridge approaches—in fact, at any dangerous location along a highway—provide the extra protection afforded by Bethlehem Safety-Beam Guard Rail.

Safety-Beam Guard Rail is ideal for use at danger points because of its strength and ability to absorb impact. The rail consists of heavy sections of steel plates, bolted together to form a continuous, impact-absorbing beam. When a runaway vehicle strikes Safety-Beam, impact is absorbed not by one post but by several, making it next to impossible to crash through the rail. In practically every case, the vehicle is directed parallel to the rail.

Safety-Beam Guard Rail is easily visible, both day and night. It can be installed quickly, even by unskilled labor, for it fastens to the post with one bolt. Can be used with either steel or wood posts. No end anchor rods, special tools or complicated adjustments are required. Safety-Beam is regularly furnished in 12 ft, 6 inlengths, but can also be obtained in longer lengths.

Our Folder 545 gives detailed information about Safety-Beam Guard Rail. Ask the nearest Bethlehem sales office for a copy, or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail Guard Rail Posts • Wire Rope and Strand • Pipe Hollow Drill Steel • Spikes • Boits and Nuts Tie-Rods • Timber Bridge Hardware Sheet- and H-Piling • Fabricated Structural Steel





Safety-Beam Guard Rail protects cars from damage on this unique course for new drivers, which is operated at Harrisburg, Pa., by Pennsylvania State Police. Guard Rail Erector: L. S. Lee & Son, Harrisburg.



Safety-Beam is easily visible at all hours, even despite heavy weed growth. This typical installation is located an Route 8, near Canton, Ohio. Contractor: Lewis and Frisinger Co., Ann Arbor, Michigan.





CARTER

CARTE

CARTER

CARTE

ARTI

CART

MARTER

MARTER

DEALERS! HUMDINGER PLUS-VALUES

Serve Your Customers better . . . longer!

Easier to sell— Give high lift to your profits!

- Unconditional guarantee—to exceed or equal performance specifications —under any conditions!
- 2. Maximum capacities—always!
- 3. Positive priming and re-priming—
- Maximum Economy—fuel economy, and continuous maintenance-free operation!
- Long-Life—compact, fully-automatic design with minimum parts for wear and replacement.
- Rugged construction—finest metal alloys, precision machined for extrastrength and maximum output.

The complete line of Carter Humdinger Pumps include high-pressure and lowpressure models—capacities from 20 to 2000 GPM—sizes 1½" to 8"—gasoline, electric or belt-drive models.

Some territories still open

Write today!

192 Atlantic Street

Contractors—write for free 24-page catalog on all Humdinger models.

RALPH B. CARTER CO.

DRAFTING ROOM EQUIPMENT
—Data sheet lists steel four-post
drafting table and an all-steel port-

able tracing board. The table is available with shallow and tool drawer, without drawers, with tool drawer only, and with shallow drawer, tool drawer, and auxiliary two-drawer unit. Each style is illustrated on the data sheet. Prices are listed for each style in the various sizes in which they are available.—Stacor Equipment Corp., 1887 Atlantic Ave., Brooklyn 33, N. Y.

STEELTEX BUILDING MATE-RIALS—Selected data sheets describe Pittsburgh Steeltex building materials and contain directions for specific applications. Pittsburgh reinforcing products are divided into two general classifications: Steeltex, a steel wire mesh with an integral fibrous backing; and Welded Wire Reinforcement, a steel wire mesh without the backing. Catalog DS-132 contains complete information for application and handling of both products.—Pittsburgh Steel Products Co., Grant Bldg., Pittsburgh, Pa.

ELECTRIC - GENERATOR SETS — Pamphlet describes different uses for independent electric generating sets. The various types and sizes available, and the purposes for which they are best suited, are listed.—Universal Motor Co., 346 Universal Drive, Oshkosh, Wis.

PLYWOOD—Many new woods and grades of plywood are listed in the 1950 Weldwood catalog. Profusely illustrated, the catalog lists 66 of the company's products.—United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

AIR TOOLS—Bulletin SCT-50 describes the complete line of 1950 Schramm Golden Anniversary tools. Included are rock drills, the WDR-126 wagon drill, paving breakers, clay spades, trench diggers, backfill and tie tampers, chain saws, vibrators, air hose, and all necessary accessories. The bulletin illustrates each tool and contains complete specifications and recommended applications.—Schramm, Inc., West Chester, Pa.

DURAPLASTIC CONCRETE — Origin, development, and applications of Duraplastic air-entraining cement are traced in a 20-p catalog. This catalog plays down technical details and accentuates pictorial presentation. More than fifty typical installations made during the last decade are illustrated and captioned to emphasize the advantages and results claimed for this cement in making durable concrete.—Universal Atlas Cement Co., 723 Chrysler Bldg., New York 17, N. Y.



Use Electric Tools on Every Job

Carry, wheel, or truck 'em to any spot and plug in for all the electric power you need. Lightweight, Onan air-cooled electric plants supply power for electric drills, saws, planers, spades, tampers, life. I any electrical equipment. Lightweight C models: 400 to 3,000 watts. D.C.: 750 to 3,000 watts. (Heavy-duty gasoline or Diesel plants to 75,000 watts.

Write for Folder

D. W. ONAN & SONS INC.

FIS Regulation Ave. Minneapelis S. Minneapela

RUEMELIN BLAST GENERATORS

A practical low-cost sand blast used by plant engineers for maintenance work. Cleans rust, paint, scale from piping, valves, fittings, renovating buildings, stripping paint from trucks, busses, trail-

ers, railroad cars, structural steel, storage tanks, ship hulls, etc. Can be fitted with Wet Adapting Nozzle for eliminating dust.

Write

Rulletin

36-R



3911 N. Palmer St., Milwaukee 12, Wis.

Manufacturers and Engineers
SAND BLAST AND DUST COLLECTING
EQUIPMENT, WELDING FUME COLLECTORS



 One of many Republic Conveyor Belts now helping users pile up bigger profits is the 24-inch Record Maker pictured above.

For nearly three years, this Republic Belt has been in constant use at the Coon Valley Sand & Gravel Company in Des Moines, Iowa.

It's a standard type belt fitted to the job by an experienced Republic Distributor, the Globe Machinery & Supply Company, and, although continually exposed to extreme and varying weather conditions, it has handled hundreds of tons of abrasive aggregates. Today, the same belt is hard at work . . . still going strong.

If, like thousands of conveyor belt users, you want custom-built features which give you results like this, without incurring special fabricating charges, check with Republic. Your local Republic Distributor carries in stock hundreds of job-designed industrial rubber goods items, like Record Maker Belting. He can give you immediate and expert service in every field of application.

Remember, Republic has been the specialist in development and manufacture of industrial rubber goods for more than 48 years!



Mr. C. W. Helstrom, Vice-President, Manager Globe Machinery & Supply Company Des Moines, Iowa

Pioneers in the use of COLD RUBBER



REPUBLIC RUBBER DIVISION
LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN, OHIO
Lee Daliva Tires & Tubes

REPUBLIC RUBBER
DIVISION





ÄRTF

CARTER

DEALERS! HUMDINGER PLUS-VALUES

Serva Your Customers better . . . longer!

Easier to sell-Give high lift to your profits!

- 1. Unconditional guarantee—to exceed or equal performance specifications

 under any conditions!
- 2. Maximum capacities—always!
- 3. Positive priming and re-priming-
- 4. Maximum Economy—fuel economy, and continuous maintenance-free operation!
- Long-Life—compact, fully-automatic design with minimum parts for wear and replacement.
- Rugged construction—finest metal alloys, precision machined for extra-strength and maximum output.

The complete line of Carter Humdinger Pumps include high-pressure and low-pressure models—capacities from 20 to 2000 GPM—sizes 1½" to 8"—gaso-line, electric or belt-drive models.

Some territories still open

Write today! 192 Atlantic Street

Contractors-write for free 24-page catalog on all Humdinger models.

RALPH B. CARTER CO HACKENSACK NEW JERSEY

DRAFTING ROOM EQUIPMENT -Data sheet lists steel four-post drafting table and an all-steel portable tracing board. The table is available with shallow and tool drawer, without drawers, with tool drawer only, and with shallow drawer, tool drawer, and auxiliary two-drawer unit. Each style is illustrated on the data sheet. Prices are listed for each style in the various sizes in which they are available. -Stacor Equipment Corp., 1887 Atlantic Ave., Brooklyn 33, N. Y.

STEELTEX BUILDING MATE-RIALS-Selected data sheets describe Pittsburgh Steeltex building materials and contain directions for specific applications. Pittsburgh reinforcing products are divided into two general classifications: Steeltex. a steel wire mesh with an integral fibrous backing; and Welded Wire Reinforcement, a steel wire mesh without the backing. Catalog DS-132 contains complete information for application and handling of both products.-Pittsburgh Steel Products Co., Grant Bldg., Pittsburgh, Pa.

ELECTRIC - GENERATOR SETS -Pamphlet describes different uses for independent electric generating sets. The various types and sizes available, and the purposes for which they are best suited, are listed.-Universal Motor Co., 346 Universal Drive, Oshkosh, Wis.

PLYWOOD-Many new woods and grades of plywood are listed in the 1950 Weldwood catalog. Profusely illustrated, the catalog lists 66 of the company's products.—United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.

AIR TOOLS-Bulletin SCT-50 describes the complete line of 1950 Schramm Golden Anniversary tools. Included are rock drills, the WDR-126 wagon drill, paving breakers, clay spades, trench diggers, backfill and tie tampers, chain saws, vibrators, air hose, and all necessary accessories. The bulletin illustrates each tool and contains complete specifications and recommended applications .- Schramm. Inc., Chester, Pa.

DURAPLASTIC CONCRETE - Origin, development, and applications of Duraplastic air-entraining cement are traced in a 20-p catalog. This catalog plays down technical details and accentuates pictorial presentation. More than fifty typical installations made during the last decade are illustrated and captioned to emphasize the advantages and results claimed for this cement in making durable concrete.-Universal Atlas Cement Co., 723 Chrysler Bldg., New York 17, N. Y.



Use Electric Tools on Every Job

Carry, wheel, or truck 'em to any spot and plug in for all the electric power you need. Lightweight, Onan air-cooled electric plants supply power for electric drills, saws, planers, spades, tampers, lights . . . any electrical equipment. Lightweight A.C. models: 400 to 3,000 watts, D.C.: 750 to 3,000 watts, (Heavy-duty gasoline or Diesel plants to 73,000 watts.)

Write for Folder D. W. ONAN & SONS INC.

RUEMELIN BLAST GENERATORS

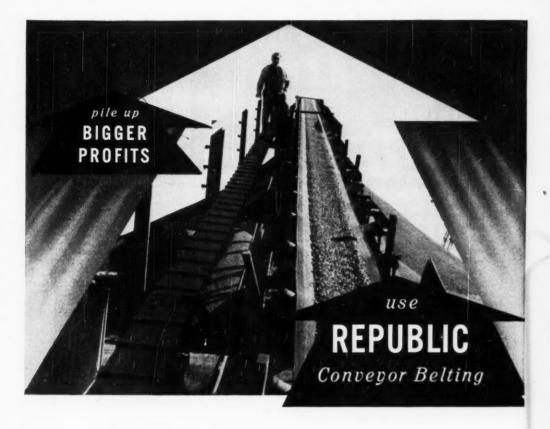
A practical low-cost sand blast used by plant engineers for maintenance work. Cleans rust, paint, scale from piping, valves, fittings, renovating buildings, stripping paint from trucks, busses, trail-

ers, railroad cars, struc-tural steel, storage tanks, ship hulls, etc. Can be fitted with Wet Adapting Nozzle for eliminating dust. Write for Bulletin 36-B

RUEMELIN. MFG. CO.

3911 N. Polmer St., Milwaukee 12, Wis.

Manufacturers and Engineers SAND BLAST AND DUST COLLECTING EQUIPMENT, WELDING FUME COLLECTORS



 One of many Republic Conveyor Belts now helping users pile up bigger profits is the 24-inch Record Maker pictured above.

For nearly three years, this Republic Belt has been in constant use at the Coon Valley Sand & Gravel Company in Des Moines, Iowa.

It's a standard type belt fitted to the job by an experienced Republic Distributor, the Globe Machinery & Supply Company, and, although continually exposed to extreme and varying weather conditions, it has handled hundreds of tons of abrasive aggregates. Today, the same belt is hard at work . . . still going strong.

If, like thousands of conveyor belt users, you want custom-built features which give you results like this, without incurring special fabricating charges, check with Republic. Your local Republic Distributor carries in stock hundreds of job-designed industrial rubber goods items, like Record Maker Belting. He can give you immediate and expert service in every field of application.

Remember, Republic has been the specialist in development and manufacture of industrial rubber goods for more than 48 years!



Mr. C. W. Helstrom, Vice-President, Manager Globe Machinery & Supply Company Des Moines, Iowa

Pioneers in the use of COLD RUBBER



REPUBLIC RUBBER DIVISION
LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN, OHIO

REPUBLIC RUBBER
DIVISION



CONVENIENT to Erect because of the patented CAM LOCK

The cross braces in ADVANCE Scaffolding have self-contained Cam Locks which secure them instantly to the panels by a flick of the wrist. No bolts, nuts, clamps, toggle pins or tools are needed. ADVANCE Scaffolding is the most convenient and fastest to erect and dismantle. Every item is 100% reusable.



The panel girts on ADVANCE scaffolds are reinforced. Every lift of panels is attached to the underneath tier by self-contained stack locks

Write for literature and name of your local distributor

BEAVER ART METAL CORPORATION

1204 Factory Ave. Elwood City, Pa.



local dealer.

Bodies are flanged, riveted and welded to prevent opening at seams. Capacity from 61/2 to 9 cu. ft.

Ask for Jackmanco and be sure.

Superior **Products** Since 1876

JACKSON MANUFACTURING CO. HARRISBURG . PENNSYLVANIA

TESTING MACHINES-Catalog RC-2-50 covers hydraulic compression-testing machines and other equipment for testing concrete, brick. tile, and other construction materials. Catalog RU-3-50 describes the Model MA universal hydraulic-testing machines. Both are profusely illustrated and include details of construction, specifications, and dimensions.—Righle Testing Machines Div., American Machine & Metals. Inc., East Moline, Ill.

HEAVY-DUTY BUCKET LOADERS -Specifications and features of two bucket loaders are listed in this 8-p catalog. The Model P-11 is wheelmounted; the Q-11, crawlermounted. Graphic presentation of features considered most important by the manufacturer are shown, together with a series of mechanical views. Center spread is devoted to on-the-job photographs.-N. P. Nelson Iron Works, Inc., Clifton, N. J.

EARTH-BORING MACHINE-Features of operation of the Sterling hydraulically controlled earth-boring machine are described in this 8-p catalog. The catalog describes operation of the unit, lists salient design features, and contains case histories of jobs on which the machine has been used .- Sterling Engineering & Mfg. Co., Wilkes-Barre,

BASCULE GATES-Working parts and general operating features of the Smith bascule gate are described and illustrated in Bulletin 153 (12 pp). These gates are designed particularly for service in pond level and floodcontrol applications. The bulletin contains several photographs showing the gates in use and shop views indicating their construction. Also listed is other equipment produced by the company .- S. Morgan Smith Co., York, Pa.

ALL-GLUED LAMINATED RAFT-ERS-Catalog tables all types and sizes of a large variety of Unit allglued laminated rafters. The catalog is fully illustrated and contains complete details for each unit in the line. -Unit Structures, Inc., Peshtigo,

RESIDENTIAL PANEL CON-STRUCTION-Simplified method of erecting small residential panels of glass blocks is described in new booklet, "Beauty Spots for Your Home." Method described eliminates structural accessories such as wall ties, expansion joints, and wall anchors. Panels covered must be 25 sq ft, or less, in area, and have a height of no more than 7 ft, or a width of no more than 5 ft. -Pittsburgh Corning Corp., 307 Fourth Ave., Pittsburgh 22, Pa.

You Need All Three...You Get All Three

1. PERFORMANCE, 2. DEPENDABILITY, 3. SERVICE

HOMELITE Carryable GENERATOR



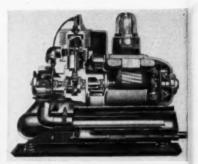
1. Performance. True, a Homelite Gasoline Engine Driven Generator is light enough for one man to pick up and carry but its performance is big enough to operate all your electric hand tools. In fact, it gives you power plus... power plus a large overload capacity... power plus a constant voltage under all loads...power that isn't sapped by long dangerous cables. Easy to get on the job; quick to start at all times, never bothered by extreme temperatures, a Homelite will keep your power tools going at peak efficiency always. It will save time and money for you on all jobs. Ask for free demonstration and see for yourself.

STICK TO THE RULE OF THREE 1. Performance 2. Dependability 3. Service, and you'll always stick to a Homelite



SERVICE. 1006 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

MANUFACTURERS OF HOMELITE CARRYABLE PUMPS . GENERATORS . BLOWERS . CHAIN SAWS . PAVING BREAKERS



2. Dependability. For more than 25 years, Homelite engineers have specialized in building carryable gasoline-engine-driven units. Their experience in building close to three hundred thousand of these units has been responsible for the simplicity of design and precision construction with finest materials that insure long-haul dependability and lowest maintenance costs.



3. Service. A Homelite seldom needs service, but when it does, there's a trained Homelite service man near you...a man who will drive his truck right out to your job and put your Homelite in perfect operating condition. This prompt, competent service is a great money saving factor for those who want to get continuous production out of their power tools.

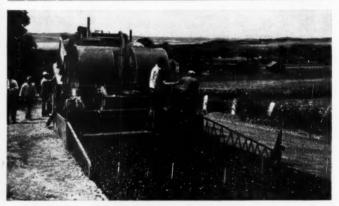


DRAFTING MACHINES — Instruction booklet (34 pp) describes use of Vemco drafting machines. The first twelve pages explain use and ordinary instruments of standard machines. This is followed by a section on how to meet special situations. Another section covers use of the civil engineer's drafting machine.—V. & E. Mfg. Co., 758 S. Fair Oaks Ave., Pasadena 20, Calif.

PLYWOOD - MAGNESIUM FORMS
—Booklet (14 pp) describes plywood
forms in magnesium frames. Features of this type of form are listed,
as are the sizes in which they are

available. Accessories for use with the forms are also given feature treatment.—Symons Clamp & Mfg. Co., 4255 W. Diversey Ave., Chicago 39, Ill.

AUTOMOTIVE WINCH — Model J20 winch for 1½- to 2½-ton trucks is described in Bulletin 113, a 1-p data sheet. This winch has a safe-working load of 20,000 lb and a gear ratio of 40:1. The data sheet lists its principal features of operation. Engineering drawings provide data on construction and dimensions.—Ramsey Winch Mfg. Co., Box 3035, Tulsa 8, Okla.







A Versatile, Flexible Machine

The Moto-Paver is a versatile, flexible machine. Aggregate may be dumped directly from trucks into the Moto-Paver hopper, as shown here, or picked up from a windrow by using an H & B Moto-Loader with the Moto-Paver.

The Moto-Paver makes road dollars go further, and do a better job, in less time. Especially on resurfacing and new construction on secondary roads and city streets. With the Moto-Paver a uniform, high quality bituminous mat is mixed and laid in one continuous operation. A smooth, waveless surface is produced, even when resurfacing over rough, irregular pavement. No other machine or method produces comparable results at combarable costs.

Moto-Paver uses beach sand, gravel, crushed stone or slag aggregates and various bituminous materials including tars, cutback asphalts, road oils and emulsions. Road speeds up to 25 miles per hour make it possible to move the Moto-Paver from one job to another in a minimum of time. Standard and heavy duty models for all kinds of operating conditions.

See your local H & B distributor or write direct for Bulletin MP-49,

HETHERINGTON & BERNER INC.

Engineers . . . Manufacturers

735 KENTUCKY AVENUE

INDIANAPOLIS 7, INDIANA

and Factory: PHILADELPHIA 22, PA

SALES AND PARTS SERVICE A department devot-

A department devoted to manufacturers' activities involving the

sale and distribution of products and parts, and service facilities. Designed to give the reader information that will enable him more readily to purchase products and parts and to service his equipment.

Distributor Appointments

Bucyrus-Erie Co.: Epperson & Co., Tampa, Fla., appointed distributor for mobile Hydrocrane. Southern Ohio Equipment & Supply Co., Inc., Zanesville, Ohio, appointed as distributor for % to 4-cu yd diesel and single-motor electric excavators.

Koehring Co.: New distributor appointments to represent Koehring and subsidiaries, Kwik-Mix Co., C S. Johnson Co., and Parsons Co. include the following: Rowen-Leahy Co., 40 Midland St., Hartford, Conn., for Connecticut and Massachusetts; Lou Garris Equipment Co., 2921 Second Ave., South Birmingham, Ala., for Alabama and Northwestern Florida; Empire Equipment Co., Sioux Falls, S. D., and in a new branch office at 823 Third Ave., Aberdeen, S. D.; Moore Equipment Co., Stockton, Calif., with a new branch office at 903 Del Paso Blvd., North Sacramento, Calif.; W. W. Williams Co., Columbus, Ohio, with a new branch office at 1260 Conant St., Maumee, Ohio.

C. S. Johnson Co.: E. M. Wakeman & Associates, 2806 Carolina Ave., Lakeland, Florida, for Northern Florida and Southern Georgia.

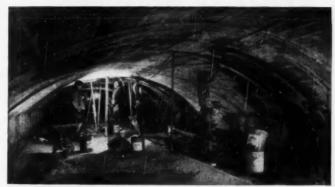
Stow Mfg. Co., Binghamton, N. Y.: Oilmen's Service and Supply Co. 967 Commonwealth Ave., Boston, Mass., for Stow truck pump drive equipment in New England area.

Sales Personnel

Allis-Chalmers, Milwaukee, Wis.: O. V. Tally named manager of Midwest region with headquarters in Chicago, succeeding Benjamin F. Bils-land; Baldwin G. Witty is new manager of St. Louis district. R. D. Moody is named manager of Los Angeles district succeeding C. W. Schweers who has been appointed manager of New England region with headquarters in Boston. James A. Longley, Jr. becomes manager of San Francisco district.

Atlas Powder Co.: James R. Russell has been appointed special representative in the company's New York district, explosives department, including New England, New Jersey, (Continued on page 166)

Underneath the river



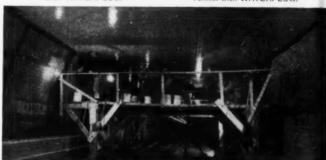
THORITE Patching Mortar Crew at work in Air Tunnel under East River, New York,



Sealing Leaks in Traffic Tunnel with WATERPLUG.



Sealing Drain Pipe Channels in Tunnel with WATERPLUG.



WATERPLUG Crew at work, before placing of tile lining, Battery Tunnels, East River, New York.

On many of the largest underground projects in the Americas and in foreign countries, WATERPLUG solves, for the contractor, his water problems. The iob may be small or it may be large, the results are the same — Successful.

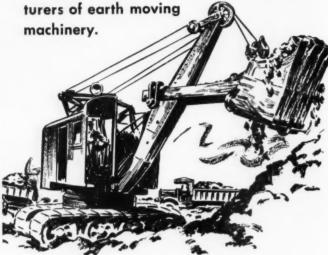
Get our 20-page brochure, pictorially describing, in detail, "How To Do It." It's yours for the asking. — No. 140.



Standard Dry Wall Products
BOX X, NEW EAGLE, PENNSYLVANIA

EASY TO WEAR-IN!

J-M INDUSTRIAL FRICTION MATERIALS
wear well from the start ... are specified
as original equipment by most manufacturers of earth moving



HARD to wear-out!

J-M INDUSTRIAL FRICTION MATERIALS wear slowly and evenly... are preferred by operators who keep maintenance costs low.

• J-M says "stop" and "go" to more tonnage than any other friction materials.

Replace with J-M Industrial Friction Materials and get better braking performance always. You're sure of long service, high braking efficiency and economical operation. Exceptionally durable, mechanically strong, J-M Friction Materials withstand faster speeds, heavier loads, harder shocks and higher temperatures. See your J-M Friction Material distributor or write Johns-Manville, Box 290, New York 16, N. Y.

Johns-Manville
INDUSTRIAL FRICTION MATERIALS

No. I With Leading Manufacturers

(Continued from page 165)

Delaware and parts of Pennsylvania, Maryland, Virginia and West Virginia.

Medusa Portland Cement Co.: Edward S. Rogers, Jr., general sales manager, has been elected vice-president in charge of sales.

Chain Belt Co.: Robert R. Horton appointed Midwest District manager for construction machinery division.

Complete Machinery and Equipment Co.: Williams Okos appointed sales manager. He will handle wellpoint equipment distribution on a nationwide basis.

Caterpillar Tractor Co.: Frank S. Foster appointed assistant sales manager, Western Division, replacing Truman E. Sage who has joined Northern Commercial Co., Seattle, Wash., the company's distributor for Alaska. Gordon J. Fowler, formerly Western Division district representative has been promoted to assistant sales manager, Eastern Division.

Link-Belt Speeder Corp.: Columbus Basile elected vice-president for operations with headquarters in Cedar Rapids.

R. C. Larkin Co.: Richard H. Lyons named sales representative servicing construction and road-building contractors in Cook, Lake, and DuPage counties, Illinois.

Link-Belt Co.: David E. Davidson elected vice-president for sales with headquarters in Chicago. Eugene P. Berg is named general manager of Pershing Road plant, succeeding Mr. Davidson.

Lee Rubber & Tire Co.: John G. Hubbard appointed field engineer for Republic Division with headquarters in Columbia, S. C., covering South Carolina and northern Georgia.

Lull Mfg. Co., Minneapolis: Herbert C. Lull appointed sales manager.

Harnischfeger Corp.: Kentner W. Shell named assistant to Robert Jones, sales manager of soil stabilizer division, succeeding Robert Graff, transferred to Dallas office.

Alloy Rods Co., York, Pa.: Frank L. Blodgett named sales manager, hard-surfacing division, with headquarters in York, Pa.

Lincoln Electric Co.: Welding engineering staff of district offices increased as follows: J. W. Brooks, serving Boston area; J. J. Chemerys, serving Syracuse territory; W. R. Karll, sales and engineering respon-



Your Smith-Mobile **IOAD[IMIT** Model can easily be converted to a Standard Smith-Mobile Truck Mixer or Agitator. A Standard Model can easily be converted to **[OAD [IMIT]** Model.

Wouldn't you like to have your trucks haul more concrete and less mixer with a lower capital investment? You can do it with these new Smith-Mobile Load Limit Models. Deadweight is reduced to a minimum by eliminating parts and assemblies not necessary to mixer operation. This means you can haul full-rated truck mixer payloads and still meet highway load limitations. And you can do it without any compromise with quality, performance or sturdiness. Smith-Mobile is the ONLY Load Limit truck mixer carrying the approved NRMCA rating plate. Models are available in 2, 3, 41/2 and 51/2 yard sizes, with higher ratings for agitators. Get the complete story. Ask for Bulletin No. 247.

THE T. L. SMITH COMPANY Copyright, 1950 by T. L. S. Co. 2851 N. 32nd St. . Milwaukee 45, Wisconsin, U. S. A.

Our 50th Anniversary - A HALF CENTURY OF PROGRESS BUILDING BETTER MIXERSI

are businessmen



COLDBLOODED?

OF COURSE NOT! Literally, their normal body temperature is 98.6—same as laborers, engineers or any other group of people. And, figuratively, they're no more, or no less, cold-blooded—as a group.

We all know unreasonable generalizations can be dangerously false. Common sense and on-the-job experience show us the value of dealing specifically with ideas, problems—and *people*.

Let's not make the big—and costly—mistake, then, of generalizing on religious or racial groups. Adopt and $carry\ out$ these common sense principles:

- ${\bf 1.}\ {\bf Accept-or\ reject-people\ on}\ their\ individual\ worth.$
- Don't listen to or spread rumors against a race or a religion.



3. Speak up, wherever we are, against prejudice. Work for understanding.

Published in the public interest by:

McGraw-Hill Publications

(Continued from page 166) sibilities in Newark, N. J., office; R. G. Todd, Tulsa, Okla., office.

General Tire & Rubber Co.: A. T. Morgan appointed territory manager in Central Pennsylvania, with head-quarters in Harrisburg. Edward J. Maitland named territory representative to cover southwest New York and northern Pennsylvania.

General Motors Corp.: Roger M. Kyes appointed general manager of GMC Truck & Coach Division, succeeding Morgan D. Douglas, on leave of absence because of ill health.

M. W. Kellogg Co.: Warren L. Smith, former senior vice-president has been elected president, succeeding Harold R. Austin, retired. Bennett Archambault is new vice-presient and general manager.

Macwhyte Co.: James A. Cowan transferred to Pittsburgh as direct factory representative; his territory will be in Pennsylvania and New York.

Milwaukee-Electric Tool Corp.: William A. Smith, Philadelphia, named representative in four Eastern states and District of Columbia. New service stations include: John Overservice stations in the Station station

berg, Jr. Co., serving Cincinnati-Norwood, Ohio, area; Parsons Electric Co., Minneapolis; and Instrument Laboratory, Inc., with branches in Portland, Ore., and Seattle. Wash.

Marmon-Herrington Co.: George H. Freers promoted to vice-president in charge of engineering.

Nordberg Mfg. Co.: Dice Cowger appointed manager of diesel engine department with headquarters at Busch-Sulzer Bros. Diesel Engine Co. Division in St. Louis, Mo.

Standard Steel Works: Ray Cartwright named manager of road equipment with headquarters in North Kansas City, Mo.: he will supervise sales throughout the United States.

Universal Concrete Pipe Co.: Thurman Manley appointed general manager of Nashville plant.

Worthington Pump & Machinery Corp.: Walther H. Feldman has been named vice-president in charge of sales, with headquarters in Harrison, N. J.

Mack Trucks, Inc.: F. S. Nickerson elected vice-president of Mack-International Truck Corp. and ap-

pointed manager of Central Division sales territory, with headquarters in Chicago.

Galion Iron Works & Mfg. Co.: Charles O. Evans appointed district representative for motor graders and rollers in states of Washington, Oregon, Idaho, Montana, Utah and Wyoming, replacing James D. Borror.

Great Lakes Carbon Corp.: Vernon O. Burkhalter appointed assistant operations manager of Building Products Division. Donald H. Gott named manager of dealer sales of Building Products Division.

New Plants or Offices

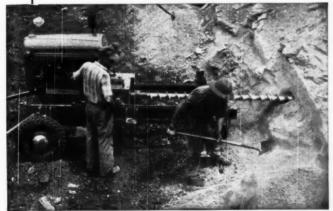
Gar Wood Industries, Inc.: Has started \$350,000 plant expansion at Wayne, Mich. Company's Highland Park (Mich.) plant will be moved to Wayne plant. Products manufactured include dump bodies, rock and quarry-type bodies and load-packer refuse collection units.

Hercules Motor Corp.: Branch at 1319 Conti St., Houston, Texas, has been relocated at 6819 Navigation Blvd., Houston. Fully equipped ma-

(Continued on page 170)

PARILLS

New Traction Drive with Forward and Reverse



THIS UNITIS DELIVERING 6-inch shot-holes READY FOR LOADING

at better than A FOOT A MINUTE!!

The new Parmanco Hi-Speed Horizontal Drill is completely redesigned around a 40 h. p. engine with four drilling speeds which, in field tests, has cut one-third off the footage drilling time—a cost-per-drilling-foot saving that we are passing on to the strip mine operator and contractor at no increase in our price. In addition, the drill is equipped with a starter and generator, dual type front wheels, truck type rear axle with mechanical brakes and a traction drive with both forward and reverse.

• For both Mines and Construction

PARIS MANUFACTURING COMPANY . PARIS, ILLINOIS





6 volumes—3763 pgs 2719 illustrations

Position

4 Here are the facts you need on every problem concerned with the design and construction of civil engineering structures. These books give you the most complete compliation of structural engineering data ever published—bring you genuinely professional information from records of actual practice. Written by 63 recognized engineering specialists, these six volumes are a complete reference on every aspect of structural engineering.

STRUCTURAL ENGINEERS' HANDBOOK LIBRARY

CM-6-50

Save \$5.75 — Purchased would cost \$35.50. Use the coupon below and get entire set for \$29.75, payable in easy installments.

4 All six volumes give you figures, diagrams, charts and tables illustrating important principles and procedures. These books assure you of superior workmanship—ensure your work of the finest structural qualities. The library . . . COVERS—the how and why of founda-tion and substructure design and con-struction, general theory of structural members and detailed design of such

-			
Send me for I ENGINEERS' will send you \$ price of \$29.75	ook Co. Inc., 330 10 days' free exam HANDBOOK Lid 4.75 in 10 days in 16 paid. Otherwin 10 days of re-	nination the BRARY, I and \$5.00 m	STRUCTURAL f satisfactory onthly until the
Name			
Address			
CID	Zone	State	

This offer agultes to U.S. only

EXPLAINS—the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

GIVES—details of design and construc-tion of steel, timber and concrete struc-tures of all types.

SEE IT 10 DAYS FREE

(Continued from page 169)

chine shop will provide quick and economical repairs and overhaul of diesel, gasoline and natural gas engines and power units.

Lancaster Engineering Corp.: Branch has been established at 206 N. 11th St., Philipsburg, Pa., to distribute Buda and Wisconsin engines and allied equipment. Ned Beezer is territorial sales representative.

Mandt Mfg. Co.: General offices, formerly in Columbus, Ohio, moved to 10421 Haggerty Ave., Dearborn, Mich., where all production has been affiliated with that of Transmission and Gear Co.

Owens-Illinois Glass Co.: Kaylo Division has transferred Dallas branch to 2201 Neils-Esperson Building. Houston, Texas, with J. K. Dixon as sales engineer. Another new branch at Oklahoma City will soon be added.

Raybestos - Manhattan, Inc.: New York offices moved from 120 Broadway to 500 Fifth Ave.

Safeway Steel Scaffolds, Inc.: Sales warehouse established at 599 John St., Bridgeport, Conn., with Albert B. Weld, Jr. in charge.

Silver Booster Mfg. Co.: Has moved to new and larger quarters at 132 West Verdugo Ave., Burbank, Calif.

Union Wire Rope Corp.: Has established offices and warehouses at 155 Howell St., Dallas, Texas, and at 903 Del Paso Boulevard, North Sacramento, Calif.

Southern Chain & Mfg. Co.: Has been organized, with headquarters in Birmingham, Ala. It is affiliated with Round Associate Chain Com-

Blaw-Knox Co.: Has opened new West Coast district office at 681 Market St., San Francisco, Calif., for construction equipment department, with Louis J. Sarosdy as manager, assisted by Lester H. Horton.

Production

A. O. Smith Corp.: J. M. Floyd named executive vice-president to assume general operating supervision of company. He has been in charge of manufacturing since 1936.

U. S. Plywood Corp.: Signed contract with Mutual Plywood Corp. of Eureka, Calif., giving U. S. Plywood access to production of 60,000,000 ft of fir and redwood plywood per an-

Thew Shovel Co.: W. J. Allaback appointed production manager.

YOU WANT A
TOP QUALITY MIX
AT THE VERY
LOWEST COST

MODELS TO CHOOSE FROM

SEAMAN SELF-PROPELLED MIXER

Close-coupled, short turning radius. Standard dual transmission gives 7 forward mixing speeds plus road gear and reverse. Wide visibility. All controls in instant reach. 7 ft. mixing width.



11 1000

SEAMAN SELF-PROPELLED TRAV-L-PLANT

All Self-Propelled advantages plus spray bar, pump, pump tachometer and tachometer wheel for accurate, no-migrating no-evaporating admixture of bitumen or water placed most efficiently just ahead of rator.



SEAMAN PULL-TYPE MIXER

Here selective speed transmission controls rotor speed instead of forward travel to obtain highest mixing efficiency despite variables in speeds of towing tractors.



TRANSPORTARIJINE

SEND FOR THIS COST ANALYSIS

We'll be glad to send you a very interesting and comprehensive report on operating and maintenance costs of the SEAMAN MIXER. It tells the story at a glance. Just write for the "SEAMAN COST ANALYSIS."

- And forever after - do your mixing with a SEAMAN!



SEAMAN MIXER

GIVES YOU BOTH

Core samples of SEAMAN-mixed pavements have been tested many times by impartial laboratories. Result: equal in quality to the work of central hot or cold mix plants.

That's because all NEW SEAMAN MIX-ERS are adjustable in either forward travel or in rotor speed to match exactly every type of soil and aggregate so that the most perfect blending of coarse and fines, the most efficient keying of aggregates and the most uniform distribution of binder is accomplished.

Now—consider cost. Road mixing is acknowledged to be the most economical method. But the SEAMAN does the job at less cost than with any other known equipment. There are good reasons: the remarkably low investment, low operating and maintenance cost, and extraordinarily high hourly output of perfectly blended and mixed materials.

For "SEAMAN COST ANALYSIS" write to

SEAMAN MOTORS, INC

280 North 25th St., Milwaukee 3, Wisc.



CHECK THESE FEATURES

LOWEST PRICE EVER . . .

USTRAC is now priced lower than ever before. Pound for pound and—inch for inch it is the best tractor buy on the market.

/ MANEUVERABLE . . .

Ruggedly constructed — designed for heavy-duty work. Only 37-inches wide, USTRAC is perfect for confined areas.

FOUR SPEEDS - INSTANT REVERSE

USTRAC has four forward and reverse speeds instantly selected by lever eliminating unnecessary stopping. Exclusive USTRAC feature.

/ INEXPENSIVE TO OPERATE . . .

Owners report fuel consumption of dependable Continental engine under \$1.50 per day.

EQUIPMENT . .

Finger-tip hydraulically controlled front and loader with bucket capacity of You cubic yard, angle dozers, bull dozers, etc., available with quick, easy one-man attachments. Easily works 14" three-bottom plow.

CLARK PARTS AVAILABLE . . .

The Clark Airborne—the tractor used by Seabees and Army engineers during the war—was the forerunner of the USTRAC. Many parts are interchangeable. If you need Clark parts check with The Federal Machine & Welder Company, Warren, Ohio.

ASK TO SEE COLOR FILM OF USTRAC IN ACTIONS

SOME DEALERSHIPS STILL OPEN!



THE FEDERAL MACHINE & WELDER COMPANY DEPT. 300 WARREN, OHIO I AM INTERESTED IN USTRAC. PLEASE SEND WE

COMPANY STATE

Advertisers in this Issue

ì	
	Adams Mfg. Ce., J. D. 9 Air Reduction Sales Co. 11 All Purpose Spreader Co. 14 All Burpose Spreader Co. 96, 9 American Hoist & Derrick Co. 7 American Hoist & Derrick Co. 7 American Brake Shoe Co. 1 American Steel & Wire Co. 22, 23, 14 Armoo Drainage & Metal Pdts. Inc. 13 Atlas Powder Co. 10 Austin, Inc., John. 3 Austin. Inc., John. 3 Austin. Western Co. 13
The second name of the second na	Badger Machine Co. 65, 66, 67, 68 Bay City Shovels, Inc. 65, 66, 67, 68 Bay City Shovels, Inc. 67, 68 Bay City Shovels, Inc. 16 Beaver Art Metal Corp. 16 Bethlehem Steel Co. 99, 15 Black & Decker Mfg. Co. 8 Blackhawk Mfg. Co. 9 Blaw-Knox Div., Blaw-Knox Co. 9 Blaw-Knox Div., Blaw-Knox Co. 2 Briggs & Stratton Corp. 13 Bucyrus-Erie Co. 128, 12 Bullard Co., E. D. 15
	Carnegie-Illinois Steel Corp. 7. Carter Co., Ralph B. 16 Caterpillar Tractor Co. 18, 19 Chevrolet Motor Div., General Motors Corp. 1 Chicago Pneumatic Tool Co. 2 Chryaler Corp. (Industrial Engine Div.) 2 Cities Service Oil Co. 2 Cleaver-Brooks Co. 88 Clipper Mfg. Co. 10 Clyde Iron Works, Inc. 6 Construction Machinery Companies 17 Complete Mach'y & Equip. Co., Inc. 153 Continental Motors Corp. 88 Continental Rubber Works 100 Cumberland Portland Cement Co. 113
The second secon	D-A Lubricant Co., Inc. 17 Davey Compressor Co. 173 Detroit Diesel Engine Div., 18 General Motors Corp. 13 Dixon Valve & Coupling Co. 164 Dodge Div., Chrysler Corp. 111 Douglas Fir Plywood Assn. 62, 63
	Electric Tamper & Equipment Co
	Federal Machine & Welder Co., The .17 Flexible Steel Lacing Co. .15 Foote Co., Inc., The .13 Ford Motor Co. (Industrial Engine Dept.) .33
	Galion Iron Wks. & Mfg. Co., The. 133 Gardner-Denver Co. 25 Gilson Screen Co. 144 GMC Truck & Coach Div., General Motors Corp. 58, 55 Goodrich Co., The B. F. 1 Goodyear Tire & Rubber Co., The. 44 Gorman-Rupp Co., The. 146 Gorman-Rupp Co., The. 146 Griffin Wellpoint Corp. 138 Guilf Refining Co. 88
	Harnischfeger Corp. 121 Hartford Fire Insurance Co., 112 Hartford Accident & Indemnity Co. 112 Haynes Products Co. 173 Haynes Products Co. 173 Harard Wire Rope Div. American Chain & Cable Co. 85 Heltzel Steel Form & Iron Co. 124 Heltzel Steel Form & Iron Co. 125 Hough Co. The Frank G. 125 Hough Co. The Frank G. 126 Hough Co. The Frank G. 127 Hough Co. The Frank G. 127 Hough Co. The Frank G. 127 Hough Co. The Frank G. 128 Hough Co. The Frank G. 128 Hough Co. 128 Hough Co. 128 Hartford Event Product Pro
	Inland Steel Co
	Jackson Manufacturing Co. 162 Jaeger Machine Co., The. 15. 61 Jiffy Products Co. 151 Johns-Manville 156 Johnson Co., The C. S. 31
	(Continued on page 174)

MONEY MAKER



SHOOTS STRONGEST CONCRETE FASTER

"Welding with Concrete" best describes the new CMC ETCRETE method of pneumatically applying concrete. JETCRETE is the most nearly perfect concrete known today. Wherever and whenever used JETCRETE has done the job better, faster—and at lower cost! The machine with a thousand uses!

- BUILDING . . . walls, roofs, partitions, fences, fire retards, etc.
- REPAIRING . . . Disintegration of all kinds—old buildings, bridges, stacks, bunkers, dams, etc.
- WATERPROOFING . . . Reservoirs, tunnels, tanks, drains, fissures, water basins, etc.
- FIREPROOFING . . . Wood structural steel . . . buildings and mines, etc.
- PRESERVING . . . Brick, concrete, steel, tile, stucco, wood, iron, spill ways, turbine chambers, piers, sewers, tunnels, etc.



Write for illustrated bulletin No. JG-348 showing JETCRETE in action. CONSTRUCTION MACHINERY COMPANIES WATERLOO, IOWA

SEARCHLIGHT SECTION

TRUCK WINCH

25,000-Lb. Capacity Truck Winch. Mede by Heil Company. 61" long, 24" wide. Mein cable drum 16" long small drum 2" long. \$199.75 EACH

> A \$350.00 VALUE

WINCH

NEW

\$37.50 A \$75.00 VALUE

Two-Speed, Hand-Operated Winch, Compilete with hand brake 2-Ton Capacity; tested for 3 Ton.

CABLE



\$12.00 EACH

DOUBLE CASLE SLINGS
25 Ft. Lang. Daubte rop: steel
cable. No dismeter cable. New
—in original paskages, 2 Hooks.
Regular Retail Price \$75,00
\$18.00 EACH

TERMS: Net 10 days to rated concerns. Others please send check with order. All items F. O. B. Cincinnati

LIQUIDATOR'S SALES CO.

1612 READING ROAD

3000A Manitowoc Diesel Shovel & Dragline 80' Boom, Fairleads, etc., for 3000A. -Lorgin Diesel Shovel & Dragline, 2 yd 1055 P & H Diesel Shovel, 3 yd., 1948. 1001 Lima Diesel Dragline. 1006 Osgood strip Shovel, 45' Boom, 134 yd. 228 B.E. Shovel & Dragline. 1 yd. Byers 1946 Diesel Shovel. 11/4 yd. Bay City 1946 Gas Shovel. 1—45B B.E. Diesel Dragline. 20 & 25 ton Steam Loco. Cranes. 37 Marion Steam Shovel, 11/2 yd D17000 Caterpillar Diesel Engine 125 H.P. Clixax Gaso. Power unit. 30 x 18 Allis Chal, Jaw Crusher, 4-7-8-16 ton Plymouth Loco. 36" ga. 48"x8"6 Shovel Boiler, 125#.
4D Cat. Bulldozer Athey Loader Galion Dieset Road Grader, 12' blade Williams Pulverizer, 75 H.P. motor. 30 H.P. G.E. 220/440 V., 1200 motor 34 vd. Dipper & 12' sticks, \$150.00.

McCARTNEY MACHINERY CO. Church St., Youngstown 10, Ohio

200 & 300 Amp. Portable Elec. Welders. 350' Gardner Denver Gas Air Compressor

Diesel Engines for Sale

2 Venn-Severin 75 HP Diesel Engines 400 RPM, Mfd, in 1938, belted connected

to 60 KVA General Electric 3 phase, 50/60 cycle, 220 volt alternators.

Price\$1,500.00

Can be inspected on original foundation under power.

Excellent condition.

A. J. WINSTON

517 South Delaware Street Indianapolis 4, Indiana



SURPLUS SALE



Genuine Timber City Radial arm saws 2 H.P. 220 volts sgl. phase 12" blade capacity 1" arbor, Regular \$410 less blade, NOW \$229.

STODDARD MACHINERY CO.

317 Court Ave., Des Moines, Iowa Phone 8-0123

SHEAVES

Several Hundred---Iron & Steel 10" to 50" Dia. 1-12 Grooves 15c LB. We have a complete stock of all kinds of Elevator Parts, Motors & Machines.

UTILITY ELEVATOR SERVICE, INC. 34 Jumel Place, New York 32, WA 7-1254

WHERE TO BUY



Waterproof with Formula No. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucce, etc., sesis—bolds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts cost; applies quickly—on mixing—ne cleanup—oe furring —ne membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.



PEAK EFFICIENCY LIFETIME VALVES

DAVEY COMPRESSOR CO.



ONE MAN

can beat

2 MEN WITH A CHAIN Only \$75.00 net F.O.B. Order from

THE MAINTENANCE CO., INC.
Dept. B, 453 W. 42nd St., New York 18, N.Y.

SEARCHLIGHT SECTION

SUBMERGED PIPE LINE CONSTRUCTION BOYCE COMPANY

Phone 3-2530

Clearwater, Fla.

USED KOEHRING CRUISER CRANE

Model 304 WC. % Vd. Capacity Equipped with 105 ft. boom and material handling bucket. Excellent condition. Priced for quick sale:

A. SCHULMAN INC.

Machinery Division
700 E. TALLMADGE AVENUE, AKRON 8, OHIO



profit-wise Contractors buy MICHIGAN 1/2 yd. Crawler Cranes!

There's no other half-yard crawler crane excavator as good . . . dollar for dollar . . . as the MICHIGAN! Why? Because only MICHIGAN gives you these job-proved, "big-machine" features:

Independent travel to save minutes on every move, hours on every job.

Tractor-ease steering to enable faster, easier maneuvering. Automatic, self-locking crawler brakes to give complete safety when working on grades.

Smooth fingertip air control to eliminate operator fatigue and that "afternoon let-down."

But, that's not all. There's the oversize internal-tooth circle gear . . . the hook rollers and independent drum assemblies . . . and there are many more. Compare MICHIGAN with any other half-yard crawler crane . . . then you, too, will agree it's your best buy! Take the first step in getting more for your money . . . write, wire or 'phone for complete details.

MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U.S.A.



INDEPENDENT TRAVEL — Standard equipment. Crawler mechanism powered through intermediate shoft's forward and reverse gears — not through swing gears.



AUTOMATIC-LOCK-ING BRAKES — Hold crawlers against downhill movement when working on grades, a feature operators appreciate. Brakes lock instantly, are released by air rams.



TRACTOR-EASE STEER-ING — Operator can maneuver a Michigan accurately and fast because it steers like a tractor — steering brakes are used instead of conventional iow-clutches.



FINGERTIP AIR CON-TROL — Air pressure to a clutch ram is regulated instantly as operator desires, thus giving him complete control and "feel of the load" at all times.

Advertisers Index

(Continued from page 172)

Koehring Co. 31 Kohler Co. 136 Kwik-Mix Co. 31
Laclede Steel Co. 183
Mack Trucks, Inc. 125 Macwhyle Co. 113 Maintenance Co., Inc. 113 Master Builders Co., The. 3rd Cover McCulloch Motors Corp. 148 McGraw-Hill Book Co., Inc. 170 McKlernan-Terry Corp. 174 Micklernan-Terry Corp. 174 Mine Safety Appliances Co. 98 Mixer Manufacturers Bureau 126 Mixermobile Manufacturers 115 Montgomery & Co. Inc. 173 Moretrench Corp. 118
Northwest Engineering Co
Oliver Corp., The. 2, 3 Onan & Sons Inc., D. W. 160 Owen Bucket Co., The. 150
Paris Manufacturing Co. 111, 169 Parsons Company 30, 31 Perfection Steel Body Co., The 120 Porter-Cable Machine Co. 69 Powder Power Tool Corp. 143 Prime-Mover Co., The 99
Republic Rubber Div. 161 Lee Rubber & Tire Corp. 161 Richmond Screw Anchor Co. 33 Roe & Sons, Justus. 4 Rogers Brothers Corp. 157 Ruemelin Mfg. Co. 160
Schield Bantam Co. 100
Templeton, Kenly & Co. 138 Texas Company. 16, 17 Thermoid Company. 21 Thew Shovel Co., The 77 Timken Roller Bearing Co., The 4th Cover Trakfor Engrg. & Mg. Co. 80 Trakfor Engrg. & Mg. Co. 197 Frilane Associates, Inc. 86 Truck Mixer Mfrs. Bureau. 73
Unit Crane & Shovel Corp. 104 U. S. Steel Corp., Subsidiaries 22, 23, 55, 76, 147 Universal Atlas Cement Co. 127 Universal Form Clamp Co. 127 Universal Mg. Co. 138
Viber Company 153 Vulcan Iron Works 104
Wellman Co., The S. K. 116 Wellman Engrg. Co., The 136 White Company, David. 130 White Manufacturing Co. 146 Wickwire Spencer Steel Div. Colorado Fuel & Iron Corp. 101
Witch Washington Co. 146 Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 101 Winslow Engineering Co. 145 Winslow Scale Co. 148 Wooldridge Mfg. Co. 28

SEARCHLIGHT SECTION (Classified Advertising)



OTHER MASTER BUILDERS PRODUCTS IN WHICH CEMENT DISPERSION IS EMPLOYED

EMBECO ...

For non-shrink grouting and reintegration.

MASTERPLATE ...

Industry's toughest floor . . . "the iron that stays on top."

MASTERTEX ...

Water-resisting cement-base paint which protects and decorates exterior and interior surfaces of concrete and masonry.

OMICRON MORTARPROOFING..

Controls shrinkage cracks; minimizes leaky brickwork, also retempering; contains stearate.

Pumped Concrete Here...

In addition to producing the easy placeability and good cohesiveness required for this pumped concrete job, Pozzolith, cement dispersion, provided these important advantages:

- 1. REDUCED PLACING COSTS
- 2. DENSE, SMOOTH CONCRETE
- 3. WATERTIGHTNESS, DURABILITY
- 4. GOOD STRENGTH

Normal concrete of any given quality is produced at lower cost with Pozzolith than by any other means, such as the addition of extra cement or of any other admixture either added at the mixer or interground.

Write for information and Pozzolith booklet.





BUILDERS

TORONTO, ONTARIO



1. MULTI-USE

Gives lowest cost per foot of hole when full increment of drill steel can be drilled and when control and reconditioning of bits are correct.



2. CARBIDE INSERT

For drilling extremely hard and abrasive ground, small holes, extra deep holes. Drillers spend more time drilling-less time changing bits.



3. ONE-USE "SPIRALOCK"

To use where reconditioning is impractical or undesirable. Lowest unit cost. "Spiralock" union holds bit on dependably - permits easy removal.

Only TIMKEN offers all 3 rock bit types...and a complete **Rock Bit Engineering Service!**

THERE'S one best bit for every drilling job. And Timken can give it to you. Only Timken makes all three rock bit types-multi-use, carbide insert, and one-use. And the Timken Rock Bit Engineering Service helps you select the type, size, and shape to give the drilling performance your job demands whether it's lowest bit cost, lowest cost per foot of hole, greatest possible drilling speed, or other desired advantage.

FREE BOOKLET: Timken's newest rock bit booklet gives full information on all three types of Timken

removable rock bits. Shows full line of bits in actual-size photographs, with detailed descriptions. Write on your company letterhead to The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



... your best bet for the best bit

... for every job